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The Canadian Medical Association Journal

*With which is incorporated the MONTREAL MEDICAL
JOURNAL and the MARITIME MEDICAL NEWS*



EDITED BY
ANDREW MACPHAIL
MONTREAL

151858
20.8.19

OLD SERIES VOL. XLII
NEW SERIES VOL. IV

TORONTO
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The Canadian Medical Association Journal

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216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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in **HAY-FEVER**

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FRITISCHE BROTHERS

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THE WINGATE CHEMICAL CO., Limited, Montreal, Agents

The Blood-forming Power of Sanatogen as evidenced by the Percentage Increase in Haemoglobin and the Count of the Red Blood Corpuscles.

Medical literature, during the last few years, has recorded many specific instances of the remarkable blood-forming power of Sanatogen.

A striking illustration of this fact is furnished in the accompanying diagram, based on observations made by Dr. Starkloff, of the Consumption Sanatorium, Belgig, and published in *Zeitschrift für Tuberkulose*, No. 6, 1911.

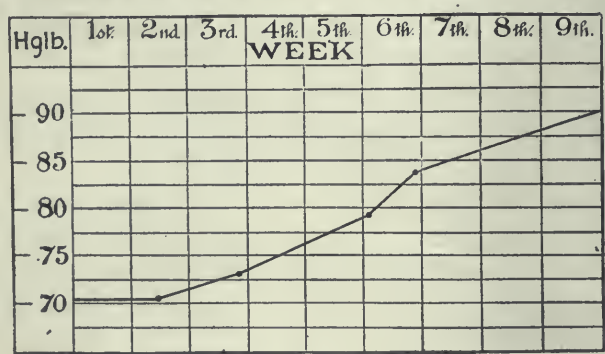
The diagram shows the average increase in the hæmoglobin content of

the blood during nine weeks, based on the analyses of thirteen patients.

It proves that during the whole period—from the middle of the second week, when the influence of Sanatogen began to make itself felt, until the end of the ninth week, when the administration of the preparation was discontinued—there was an uninterrupted rise in the hæmoglobin value from about 71 per cent. to 90 per cent., or, roughly, 20 per cent. for the period.

AVERAGE HAEMOGLOBIN INCREASE

from Observations made by Dr. Starkloff at the Consumption Sanatorium, Belgig.



Conclusive as is the evidence furnished by the diagram, its importance is considerably emphasised by similar results recorded in English periodical literature.

Thus, in *The General Practitioner*, the author of an article records the following cases: (1) A girl of 17 was suffering from right supra-orbital neuralgia of considerable intensity. The red corpuscles numbered 3,900,000 per c.mm. and the hæmoglobin value was 40 per cent. She took Sanatogen for twenty-one days, when her red corpuscles numbered 4,200,000 per c.mm. and the hæmoglobin had risen to 56 per cent. She made a quick recovery.

(2) A fair-haired girl, aged 12, suffering from a fourth attack of chorea, showed red corpuscles numbering 3,600,000 per c.mm., with hæmoglobin 49 per cent. At the end of a month

the red corpuscles numbered 4,500,000 per c.mm., the hæmoglobin 55 per cent., and the choreic movements had entirely disappeared.

Again, in *The Medical Press and Circular*, the writer of an article records this case:—

A woman, suffering from melancholia, who took to her bed after sustaining a severe shock from the sudden loss of her favourite child, showed red corpuscles numbering 3,800,000 per c.mm., with hæmoglobin 48 per cent. At the end of a fortnight's treatment with Sanatogen, her red cells had risen to 4,000,000 per c.mm. and hæmoglobin to 52 per cent. Her mental equilibrium was restored and she was able to resume her home duties. The physician recording the case states: "The improvement in this case was most striking and suggestive."

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The Canadian Medical Association Journal

VOL. IV.

JANUARY, 1914

No. 1

THE MEDICAL TREATMENT OF CHOLELITHIASIS

BY H. B. ANDERSON, M.D., L.R.C.P. (Lond.), M.R.C.S. (Eng.)

Associate Professor of Clinical Medicine, University of Toronto.

ONE need scarcely apologize for bringing before a society of this kind the treatment of a condition so common and important as cholelithiasis, considering the wide diversity of opinion which still exists among competent authorities as to the best procedure in certain phases of the disease. No one questions the wide field which surgery occupies in the treatment of cholelithiasis, nor the excellent results which in many cases can be obtained only by surgical means.

The question rather has been raised as to whether there is any efficient medical treatment for any stage of the condition, or if the diagnosis of cholelithiasis carries with it in every case the responsibility on the part of the medical attendant of advising early recourse to operation. Curiously enough, physicians have been amongst those who have taken the most extreme position in advocating early surgical measures. Thus Billings says, "Gallstone disease must be recognized as a surgical disease, and in view of the many possible consequences, the most conservative physician may well hesitate to take the responsibility of non-surgical treatment." Dieulafoy, entirely dismissing medical measures, says that, "When once the diagnosis of calculous cholecystitis has been made recourse must be had to surgical intervention."

When physicians are such strong advocates of operation one is more readily prepared for the opinion expressed by Bland Sutton that, "The best and wisest physicians are those who

Read at the annual meeting of the Canadian Medical Association, London, Ont., June, 1913.

point out to their patients that surgical assistance constitutes the best remedy"; or by W. J. Mayo, who says that, "Whilst it cannot be denied that temporary palliation can be procured by non-operative measures, the cure of the patient can only be brought about by surgical means." Sir Berkeley Moynihan is no less emphatic: "I hold that when once a diagnosis of gallstones has been made, operation is always indicated unless there are grave reasons forbidding resort to surgery. Reasons should not be asked for to support a plea for operation, but in order to justify any other course. For surgical treatment—all things considered—is far safer than medical treatment; it is *curative*, not *palliative*; its results are *permanent*, and not *temporary*."

On the other hand, Kehr, a surgeon of the widest experience in this disease, with a record of nearly two thousand operative cases, and one to whom we owe much of our present knowledge of cholelithiasis, in an address before the *Berliner Medizinische Gesellschaft*, affirmed that in at least 80 per cent. of all cases of cholelithiasis "medical measures alone will suffice," basing his opinion not only on his own observations, but also on the results of the extensive investigations of Aschoff and Bacmeister into the pathology of the disease.

When so wide a divergence of opinion exists among recognized authorities, where in the meantime may one look for the safest guidance as to the course to advise in a particular case? The position taken by Mayo Robson that "Medical treatment must be tried fully before surgical measures are resorted to, but if after a fair trial medical means fail, surgical treatment should be adopted before serious complications supervene, and before the patient is reduced by jaundice, suppuration, or other untoward manifestations," appears, so far as one can judge from recently expressed opinions, to represent pretty accurately the views of the majority of internists in different countries, and I believe is most nearly in accordance with recent investigations and clinical experience.

It must be recognized, even by those accepting the most extreme views as to the general advisability of surgical treatment, that it is impossible of application in many cases, owing to the patient's physical condition, and that therefore in such cases the only hope of relief is in medical measures. In this connexion one need only recall advanced arteriosclerosis, cardiac disease, renal disease and diabetes, and when one considers that cholelithiasis is especially a disease of advancing age, it is obvious that many of the cases fall into the class in which, for this reason, operation is pre-

cluded. It would, therefore, be unfortunate for us to take an unwarrantably pessimistic view of the only measures available in many cases.

It cannot be denied that during the last few years the tendency in Great Britain and America, influenced by the experience and teaching of so many eminent surgeons, has been to regard all cases of cholelithiasis, with the exception of those in which some definite contra-indication is present, as calling for operation.

It is equally true, however, that most physicians and surgeons alike have receded from the position which formerly attached so much importance to the mere mechanical presence of gallstones. Following the teaching of Naunyn, Kehr, Aschoff, and other German investigators, a much broader view of the whole pathological process is being taken, in which the formation of gallstones is regarded as a mere incident of a disease, in which *bile stasis, infection, and more or less wide-spread inflammatory manifestations* are of *primary* importance, and against which treatment, whether medical or surgical, must be directed. Attention is being directed more to *biliary stasis, infection and inflammatory manifestations* rather than focussed on the *secondary* result—the calculi. Kehr considers the calculi in inflammation of the biliary passages in the same light as the fecolith in appendicitis—a product of the inflammation.*

All these authorities believe that medical measures may be effective in relieving the inflammatory trouble in many instances, and in producing a virtual cure. Physicians have long since abandoned the attempt to dissolve gallstones as a primary object of treatment, and surgeons are realizing that the mere removal of gallstones by operation does not constitute a cure. The idea of *stasis, infection and inflammation*, is dominating therapeutic aims. This being the case, medical and surgical treatment are no longer opposed, but rather complementary to one another. In cases where good drainage can be secured, so that stasis, inflammation and infection are relieved without operation, and the patient remains free from symptoms, this is accepted as evidence of the absence of serious local irritation by the gallstones. If by reason of the mechanical effects of the gallstones or for other cause the symptoms of infection do not subside, then operation is indicated for its relief. Kehr's statistics show that results of operation at this time are al-

* Since Aschoff has shown that *non-inflammatory cholesterolin calculi* may occur following bile stasis and certain metabolic disturbances, as in pregnancy, Naunyn's view as to the *invariable* presence of infection underlying cholecystitis is no longer tenable on pathological grounds, though clinically the fact remains that these cases are unimportant so long as no infection occurs.

most as good as in early operation. The belief that gallstones might be dissolved was long held by many physicians. Naunyn thought this might occur in rare instances. This view has been largely discarded, but some recent investigations by Hanseemann have reopened the question. He has apparently proved by experiments *in vitro*, and by transferring gallstones from human beings to dogs, "that gallstones are soluble in normal bile, particularly stones composed largely of cholesterin." He believes, therefore, that if by treatment, the catarrhal condition of the bile passages can be cured, inflammatory products removed, and the bile restored to its normal condition, the stones will be dissolved spontaneously. Treatment, according to him, should be undertaken with this aim in view, rather than with a view direct to action on the gallstones. The article is accompanied by a number of illustrations, showing sets of gallstones in various stages of being dissolved, the research reported establishing once more that normal bile under normal conditions does not permit concrements to develop, and will dissolve in time those already formed. The peculiar shape of the gallstones found at the operation in many cases is due to their being partly dissolved. Hanseemann's work, if confirmed, will obviously have an important bearing on treatment.

The quiescence or latency of gallstones in any case is now denied by some advocates of early operation, who believe that, if *clinically* quiescent, gallstones are *pathologically* active. Convincing data, however, have not been brought forward to establish their views, which seemed based largely upon personal opinion.

Apart from the question whether gallstones may or may not be dissolved, so long as the teaching, based on autopsy records and clinical experience, was accepted that in over 90 per cent. of all cases they remained latent, medical treatment had a safe objective point. If the infection, bile stasis and attendant inflammation, which have been shown to be the causes of gallstones, could be removed, and they remained merely as innocuous occupants of the gall-bladder, then a natural tendency to a *virtual* cure was indicated. If, therefore, in a given case, this latent condition could be brought about and maintained, both the physician and the patient were satisfied with the results. It must be admitted that in many cases formerly regarded as latent, fuller knowledge and improved diagnostic technique would now recognize gallstones as the underlying cause of digestive disturbance, flatulency, etc. We are greatly indebted to surgery for this knowledge, but it has not established the view that gallstones are never latent.

Apart from his experience with large numbers of cases, and the opportunity of seeing the pathological conditions at operation, the advantages of observation are not all on the side of the surgeon. The physician is usually able to follow his cases over a longer period, and often has a better opportunity to study, not only the initiation of disease, but ultimate results. The surgeon, moreover, deals with the more severe cases, those which have resisted medical treatment: in other words, the class of cases which all are agreed properly belong to the domain of surgery.

His experience being with the more severe, more resistant and complicated cases, he naturally takes a more serious view of the disease, and thus of the *hopelessness* of other than surgical relief. Dealing only with surgical measures, he is not in a position to estimate as fully the value of non-operative treatment as the physician, who has seen even a limited number of cures without operation.

While accepting the data supplied so abundantly by the surgical clinics, one may properly question if the broad generalizations sometimes made therefrom are in accordance with established facts. The teaching of Naunyn, Kehr, Aschoff, and others, as before mentioned, that stagnation of the bile and infection are the chief underlying factors in the development of cholelithiasis, is now generally accepted. Obesity, pregnancy, ptosis of the viscera, faecal stasis, infections in the portal area, and metabolic disturbances, are well recognized contributory causes. Gallstones are the *results* of these factors, and not the primary cause of the disease. If the basis of rational treatment be the removal of the cause of the trouble, are we warranted in concluding that a cure has been effected when the removal of these causes is only *incidental to*, and *not the main object of treatment*? Gerster, in studying the causes of failure after operation, has recently directed the attention of his surgical colleagues to the advisability of a more careful consideration of the teaching of Naunyn.

The spectre of danger from the development of serious, perhaps irremediable, complications from delayed operation is usually raised by the surgeon, his views naturally being based on the class of cases coming to him for relief. But it will scarcely be argued that his experience represents the average of those who have to deal with cases of all degrees of severity, from the mild or latent to the most serious. In proportion to the general incidence of gallstones, in from 5 to 10 per cent. of autopsies, the occurrence of many of these most serious complications, such as cancer, gangrenous cholecystitis, gallstone ileus, etc., is so infrequent that the danger of their

development in a given case is too remote to constitute *in itself* a reason for operation as a *general procedure*. Is it correct to assume that recourse to early operation would appreciably reduce the general mortality by forestalling these rarer complications, when in the majority of all cases gallstones are latent, or at least do not produce symptoms sufficiently definite to permit of a diagnosis, and especially when the course of the disease will give timely warning in most of the diagnosable cases, and direct them to the surgeon? I believe that many clinicians will agree with Kehr that it is fortunate that we are unable, by the x-rays or other means, to recognize the quiescent causes, if the presence of gallstones *per se* is to be taken as an indication for their removal.

But again it is claimed that operative cures are permanent, whereas medical cures are merely palliative. This statement, however, is scarcely in accord with our knowledge of the pathology of the disease or our clinical experience. After operations the bile stasis, infection and inflammatory changes must subside, and the underlying causative factors be removed, before the patient can be regarded as cured.

If the gall-bladder is not removed, and if the causes underlying the original infection which produced the gallstones remain or recur, on what grounds have we a right to claim that the stones will not form again, as in the first instance? Operative procedures have not been in vogue a sufficient length of time to determine definitely how frequently recurrences may take place, but that they do occasionally is well known. I have at present a case under observation, with symptoms of recurrence six years after operation. Gerster, in a paper on "Unsuccessful surgery in disorders of the bile ducts," reports 11 per cent. of relapses in fifty-seven operative cases, and quotes Ochsner's failures as 15 per cent. in *calculous* and 54 per cent. in *non-calculous* cases. It is therefore apparent that the claims of *certainly of cure* and *permanency of result* after operation cannot be accepted without qualification.

The danger from operation, even in the most skilful hands, is not to be overlooked. The mortality in Mayo's series of four thousand cases was 2.57 per cent., and in the cases collected by Bland Sutton from the English hospitals in 1905, 17.7 per cent., the results varying with the conditions calling for relief and the experience and skill of the operator. Nor must we confound recoveries from operation with the cure of the patient's ills. As with medical cures, only time can show the permanency or otherwise of relief. Gerster and others believe that drainage after opera-

tion is essential for the relief of the infection, and undoubtedly this is the case. It is remarkable, however, that in non-calculous cholecystitis, where the infection and its sequences alone are to be dealt with, operation frequently fails to give relief.

Viewing the brilliant results so often achieved by operation in cases where medical measures have failed to afford relief has tended, I believe, to make many take too pessimistic a view of non-surgical treatment. The strong opinions expressed by Kehr, Naunyn, Aschoff, Hansemann, Bain, Solis-Cohen and others as to the effectiveness of medical treatment, are widely held by many practitioners of lesser experience, and these opinions must not be dismissed too lightly. I have a considerable number of patients who remain perfectly well, so far as all symptoms or other evidence of disease is concerned, for periods varying from fifteen years or less.

The non-operative treatment which has had the widest vogue and has longest held the confidence of the profession, is the Karlsbad cure or some home modification of this treatment. This consists chiefly in the copious use of hot Carlsbad Water or Carlsbad salts dissolved in hot water. The waters of Vichy, Ems and Neunahr have a similar action. In addition rectal injections of hot water are sometimes used. The diet should be plain and unirritating, and the intervals between meals should not be too long. Some authorities attribute little importance to diet, but I have repeatedly seen dietetic indiscretions followed by a lighting up of acute symptoms. The administration of bile salts and salicylates for their chologogic effect, and of urotropin as a biliary antiseptic, is generally considered of value.

A point which is too frequently overlooked after an acute attack, is the necessity of *prolonged rest in bed*, not alone until all symptoms have disappeared, but until pain, and tenderness on pressure have passed away, and sufficient time has elapsed for the subsidence of the local inflammation of the bile passages, re-establishment of drainage, and the disappearance of infection. This usually necessitates three or four weeks absolute rest in bed. Hot poultices are of value during the acute stages. I do not believe that any case has been given the full benefit of medical treatment where complete rest for some weeks has not been carried out. Vaccines have been suggested to assist in removal of the infection, but of these I have no personal knowledge. In the subsequent management of cases, the treatment of visceroptosis by a suitable abdominal support, the avoidance of fæcal stasis and recurring infections in the portal area (appendicitis) are very important.

It is interesting to note that prolonged rest is an essential factor in the surgical management of the disease.

Time will not permit of my entering into a detailed discussion of the medical treatment, nor indeed is this necessary.

In conclusion, I believe the following statements are fairly warranted by our present knowledge of the disease:—

1. That while surgical procedure is frequently the best, and often the only means offering a chance of relief, its advocacy, based on certainty of cure and assurance of non-recurrence, is not borne out by results.

2. That the main object of treatment is the relief of the infection and inflammatory changes, and not merely the removal of the gallstones. So long as there is no recurrence of the inflammatory attacks, there will be no attacks of gallstones.

3. That recovery not infrequently occurs under non-operative treatment, especially in early and mild cases, and particularly after first attacks, before serious local damage has been produced by the infection.

4. Medical treatment should be given a fair trial in all cases where the patient's physical condition does not warrant operation, and with the numerous patients who refuse operation. In many such cases I have seen complete and permanent recovery from all symptoms of the disease.

5. Medical treatment is indicated in many cases as a preliminary to operation, and in order to allow the acute infection to subside as far as possible.

6. Medical treatment is indicated in all cases *after operation* to allow of complete subsidence of the infection and, if possible, to prevent re-infection and recurrence.

7. I believe that it would make for clearness of thinking and give definiteness to therapeutic aims if we adopted the suggestion of Naunyn and gave up the term cholelithiasis and classified these various infections of the biliary passages as *cholangitis*, with qualifying terms such as *simple*, *catarrhal*, *suppurative*, *gangrenous*, *calculous*, etc., according to the condition present in the particular case.

Personally, I never advise strongly against operation in any case unless it is definitely contra-indicated, but, after explaining the possibility of failure, and that operation may eventually be required, I do not hesitate in early and mild cases, and especially after first attacks, to give medical treatment a thorough trial, and have found that in many instances excellent and permanent results have been obtained.

SYPHILITIC INFECTIONS OF THE CENTRAL NERVOUS SYSTEM

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THERE have been no more remarkable years in medicine than the last decade. In 1903 Metchnikoff infected apes with lues, thus robbing syphilis of its mystery and giving it a definite standing among infectious diseases. Schaudinn discovered the *spirochaeta pallida* in 1905, while Wassermann announced his famous reaction in 1906, and Ehrlich gave to the world salvarsan, that synthetic substance that possesses a unique dual property, viz., a remarkable spirocheticidal activity and an absolute innocuousness to the infected tissues, in 1909. These notable results would seem to have followed each other in an ordered sequence and thus prepared the way for the no less brilliant researches of Noguchi and his co-labourers. In 1912, the former discovered the pallida present in twelve out of seventy paretic brains he was investigating. In a later report, he states that he has examined two hundred brains of paretics and twelve spinal cords of tabetics; the spirochetes were found in forty-eight brains of the former and one spinal cord of the latter.*

These findings have greatly simplified the complex problem of syphilogenous nervous disease. Paresis and tabes are the direct result of the action of the pallida on the cortical and spinal neurons. This underlying pathological process is not found in other forms of syphilitic nervous disease, although the lesions of paresis have been observed coëxisting side by side with those of cerebral and tertiary syphilis. While Fournier's theory of parasymphilis is, in the light of recent researches, no longer tenable, yet there still remain certain

A clinical address delivered before the Manitoba Medical Association, Brandon, Manitoba, June 6th, 1913.

*Marinesco has found the spirochetes in the cortex in 2 out of 26 paretic brains he has examined. Forster and Tomaszewski, after the method of brain puncture devised by Neisser and Pollak in living subjects, have succeeded in demonstrating by dark ground illumination, active spirochetes in 8 out of 20 cases investigated. Levaditi, Marie and Banchowski have recently demonstrated (July, 1913) the spirochetes in brains freshly obtained, in 8 out of 9 cases of general paralysis. They prefer the ultra-microscope. They have also used staining with India ink and Fontana's method (a modified silver process) with positive results.

difficulties awaiting solution. Why are the pathological findings in paresis and tabes so absolutely distinctive? And why do they differ so radically from those observed in nervous syphilis? Can it be due to the personal equation, or to the neurotoxic action on the part of the spirochetes? The following facts are suggestive of the latter theory: According to Morel-Lavallée, Bélières and Bouvaist, six men infected with lues from the same woman all developed paresis. Of three men, says Nonne, who were infected in one night by the same person, one developed tabes and two paresis. Erb states that five men obtained their tabes and paresis from the same source (Kräpelin). Brosius mentions five glass blowers who contracted simultaneously a chancre of the lip from their occupation, of whom four developed tabes and one paresis. The simple fact would seem to be that nervous syphilis, paresis and tabes are but varied expressions of a far reaching reaction to the *spirochæta pallida*. General paralysis, says Robertson, is one of the manifestations of active syphilis. Marinesco believes that in paresis we are "face to face with the results of the direct action of the *spirochæta* on the cells of the brain cortex." Tabes and paresis are one and the same disease differing only in location, extent and intensity of the process. Nageotte regards these diseases as pathologically identical, the clinical aspect being determined by the initial localization.

Diffuseness is a distinguishing characteristic of nervous syphilis. While the clinical syndrome may indicate that the brain or cord is the chief seat of attack, yet as a rule the entire nervous system is to a greater or less degree affected. Commonly it manifests itself within the first ten years following infection, occurring most frequently between the third and fourth year. Out of three hundred and thirty-five cases investigated by Nauyn, forty-eight per cent. developed symptoms of cerebral lues during the third year (Gregory and Karpas). Recently I reported a case of acute syphilitic myelitis that developed four months after exposure. Tourette has reported a case of cerebrospinal lues that occurred two months after infection. Paresis and tabes, on the other hand, do not usually occur before the tenth or twentieth year after infection. Paresis is unusual before thirty years of age, fairly frequent after fifty (Kräpelin). In sixty-five cases of tabes, Mott found the average age of onset to be thirty-seven years; the average interval of infection in one-half of these was fifteen years, while the shortest was four.

Nervous syphilis (acquired) manifests itself in two ways: First, "those redoubtable cerebrospinal localizations," says Chauf-

fard, "which constitute the darkest chapter in the history of syphilis," viz., inflammatory affections of the membranes, vascular syphilis, tertiary manifestations, arteriosclerosis and multiple neuritis. Second, progressive neuronie degeneration of certain neural systems, as the sensory neurons in tabes, and a more diffuse involvement in paresis and a combination of both of these morbid activities in taboparesis. The lesions in acquired syphilis are arteritis, thrombosis, cerebral meningitis, meningomyelitis, acute myelitis, meningitis and gumma; the more usual being basilar meningitis and meningomyelitis. Certain chronic conditions sometimes observed in the kidneys, liver and myocardium are explicable along the line of an old forgotten syphilis.

The differentiation of these various specific affections is frequently a matter of great difficulty. The researches of Wassermann, Nonne, Noguchi, etc., have greatly simplified the problem. Laboratory methods and the clinical syndrome are both needed to arrive at a diagnosis.

THE WASSERMANN REACTION. Its importance for diagnostic and therapeutic purposes cannot be over-estimated (Ehrlich). No examination can be considered final unless the four reactions of Nonne are employed, viz., Wassermann (blood serum and spinal fluid), lymphocyte count, and globulin reaction. Nonne has emphasized the fact that the Wassermann reaction is only a symptom and its absence does not invalidate the diagnosis. It is present in from eighty to ninety per cent. of syphilitics. In early nervous syphilis it is found in one hundred per cent. of the cases, in its secondary and tertiary forms the percentage may fall to seventy, and during the latest period it may reach fifty (Jelliffe). The results obtained from the original Wassermann, where only 0.2 cc. of spinal fluid is used differ radically from those obtained by Hauptmann's modification, in which increasing strengths of spinal fluid are employed. In the latter all forms of nervous syphilis, viz., cerebrospinal lues, paresis and tabes, give a positive reaction; in the former, paresis is uniformly positive, tabes not quite so constant, and cerebrospinal lues is negative. General syphilis without involvement of the nervous system gives a negative reaction even with the larger quantities of fluid.*

*Lange's colloidal gold test. Recently certain writers have called attention to this test which they regard as more delicate than those heretofore in use. To a certain amount of cerebrospinal fluid of a paretic is added in the presence of 0.4 of sodium chloride, colloidal gold solution. There results a certain change in colour which is absolutely characteristic of paresis. The tabetic spinal fluid is quite distinctive but not pathognomonic; cerebrospinal syphilis reacts in about the same dilutions. Non-specific cases either failed to react or reacted at different dilutions.

LYMPHOCYTOSIS. Ten lymphocytes to the c.mm. is pathological. Sicard, also Ravaut, have called attention to the fact that pleocytosis may antedate all neurological symptoms; it has been observed as much as two years before the manifestation of the disease (Jelliffe). According to Mott, the membranes are affected at the time of the appearance of the cutaneous rash. Lymphocytosis is not limited to nervous syphilis, and by this term I mean both the non-degenerative and the degenerative forms of the disease (paresis and tabes). It is often seen in tubercular meningitis, in essential epilepsy, multiple sclerosis, etc. The absence of lymphocytosis does not negative the presence of paresis, since it is known to be absent in 10 per cent. of these cases; it is, however, one of the earliest and most reliable indications of the onset of both paresis or tabes. In one of Boyd's cases of the former, the cell increase was three thousand four hundred.

THE DETERMINATION OF GLOBULIN CONTENT.—In the neuroses or in healthy people this reaction does not occur; in other forms of nervous disease, it is not infrequently seen, while in cerebrospinal syphilis, paresis and tabes, it is rarely absent. Globulin excess is observed in spinal tumours, both specific and non-specific; it bears a distinct relation to lymphocytosis but not to the Wassermann reaction. The Nonne-Apelt and Noguchi reactions indicate simply globulin excess. Nonne's Phase I consists in mixing equal parts of spinal fluid and a neutral solution of ammonium sulphate. If the fluid becomes milky or cloudy within three minutes, the test is positive. Noguchi's butyric acid test* causes a definite, flocculent precipitate either immediately or within two hours if globulin excess is present; in my own experience, it has been more sensitive and reliable than Nonne's Phase I. According to the latter, Phase I is never present in a luetic unless the nervous system is involved.

THE DEGENERATIVE PHASE OF NERVOUS SYPHILIS: PARESIS AND TABES. Fisher estimates that from 10 to 15 per cent. of luetics develop this type. Robertson says that from 3 to 5 per cent. of all syphilitics, or from 9 to 15 per cent. of those who have not recovered after the lapse of five years, result in paresis or tabes. Moebius styles paresis tabes of the cerebral cortex. Of two hundred and thirty-six cases of tabes analyzed by Byrom Bramwell, 11·4 per cent. became paretic. According to Mott, 10 per cent. of general paralytics are of the tabetic type. Ten per cent. of five hundred

*To 2 c.cm. of cerebrospinal fluid add 5 c.cm. of 10% butyric acid with the application of heat: to this add 1 c.cm. of a 4% solution of sodium hydrate with the further application of heat.

cases studied by him showed marked sclerosis of the posterior columns. Fürstner is inclined to the opinion that the spinal cord is always affected in paresis, and Raymond and Nageotte assert that every paretic would show tabetic symptoms if he lived long enough.

According to Kræpelin, from 10 to 20 per cent. of asylum admissions are paretics, and it has attained its present frequency in our day. Over 13 per cent of all cases admitted to the New York State insane asylums in 1911 were cases of paresis. In Philadelphia the cases of paresis, tabes and cerebrospinal lues admitted to the neurological wards form 15 per cent. of the admissions. There has been in England a marked increase in the industrial and mining regions, and a decrease in the agricultural. It occurs more frequently in men, the ratio varying from one to four, to one to seven. In the opinion, however, of Dr. George T. Mills, of the Central Islip State Hospital, New York, this disparity does not exist, the ratio is practically the same. Hoppe finds from the figures of Altscherbitz, that one case of paresis occurs to every three thousand people in the city, while in the country only one in every nine thousand is affected. Among prostitutes, 58.5 per cent. of deaths are due to this disease (Kræpelin). Chiarugi and Haslam and Esquirol were the first to give a description of *dementia paralytica*. Bayle, in 1822, and Georget and Calmeil, in 1825, gave the first accurate portrayal of its mental and physical symptoms, thus creating a new clinical syndrome which was not, however, kindly accepted by all alienists. Griesinger regarded it as simply a combination of mental diseases, and even to-day, says Kræpelin, there are still those who look upon it as a composite of mental diseases rather than a morbid entity with a distinct anatomo-pathological basis, which makes it one of the best recognized diseases in all medicine.

Griesinger's mental attitude finds a ready explanation in the kaleidoscopic character of the mental symptoms. No description can embrace all the confusing vagaries; the symptoms may simulate those of any of the well-known forms of insanity. "Any mental complex," says Smith, "can be present in general paresis." The basic fact is a *peculiar progressive mental weakness*, and on this foundation of dementia are grouped a great variety of psychotic symptoms changeable as the sand dunes of Cape Cod, varying from month to month, and even from day to day. The conventional clinical forms are only arbitrary groups adopted for convenience, the better to facilitate the description of the clinical features of this disease. *None of them runs absolutely true*, the distinctive feature being a

slowly developing dementia associated with an organic brain disease and characteristic pathological findings.

There are three types, viz., the demented, depressed and grandiose. These paretic syndromes are often preceded by a pre-paretic or preliminary period. From the laboratory findings at this stage one may be able to predicate the appearance of paresis months or years before its evolution. Frequently the symptoms at this time are those of neurasthenia. There is marked fatigability, insomnia, irritability, lack of initiative and of concentration. The patient is less alert and keen than formerly and is absent-minded; there is moral deterioration; he indulges in all kinds of excess; is untidy and careless about his personal appearance; judgement is impaired, and the characteristic psychic weakness is clearly evident. The perceptions are very early at fault; the mental reflexes are sluggish, he cannot grasp details, is inattentive, indifferent, loses himself even among familiar surroundings, and acts as though he were mildly intoxicated or in a dream. The association of ideas is impaired, those most used being the longest preserved. The insane beliefs may all be present although illusions and hallucinations play but a minor part; delusions are almost invariable, with occasional exceptions in the dementing form. Illusions of hearing are more frequent than those of sight; hallucinations of taste and smell, while sometimes seen, are not as prominent as those of sight. Memory defects are common, especially those pertaining to recent events. There is marked difficulty in calculation; ridiculous mistakes are made in the simplest problems. As the disease progresses memory becomes totally lost.

The fantastic character of the delusions is an index of the degree of the dementia. Kræpelin refers to disturbances of will such as are seen in catatonics, viz., catalepsy, echolalia, verbigeration, resistiveness, stereotyped movements, etc., but says that he does not feel justified in creating a special catatonic form of this disease. Criminal actions are not unusual, such as sexual misdemeanors, purposeless stealing, homicides, etc. Suicide must always be kept in mind. There is a liability to senseless whims and impulsive actions; one of Kræpelin's cases stepped out of a second story window to pick up a cigar stump he noticed on the sidewalk below him. There is frequently observed a bustling, meaningless business activity and a constant letter writing. The nervous symptoms are of greater importance and give "the particular stamp to the disease." A severe initial headache is usual, dull in character. The brain feels as though it were pressed upon by a heavy

weight. Word deafness, word blindness, hemianopsia, apraxia, auditory hallucinations, etc., point to the involvement of definite cortical areas. Optic atrophy is observed in from 4 to 20 per cent. of the cases, notably those where the posterior columns are degenerated (Kræpelin, Mölis, Osler, Norris, and Oliver). Martins notes a loss of ability to recognize the taste of salt, Toulouse states a third of his cases were unable to perceive the smell of camphor. In posterior cord involvement, the sensory disturbances are characteristic of tabes; as the disease progresses all forms of cutaneous sensibility are affected. If the patient's attention is diverted, one may stick a pin through the skin without his knowing it. The loss of sensibility applies to the internal organs as well and should always be kept in mind, since only in this way can burns and serious injuries be avoided. Pneumonia may run its course without even being recognized. The face is expressionless, and both it and the tongue are subject to fibrillary tremors. The voice is monotonous; the loss of resonance is often the first symptom observed in singers. In advanced cases a persistent, rhythmic grinding of the teeth is almost invariably observed. Aphasia, paraphasia, and disturbances of articulation and of writing are of very common occurrence in this disease. Pupillary disturbances are most frequent, viz., deficiency in size, distortions of the pupillary outlines, loss of consensual light reflex and Argyll-Robertson pupil, the latter occurring in from 50 to 70 per cent. of the cases (Westphal, Ræcke, Siemerling, Franz). *The Argyll-Robertson pupil means simply that the nervous system has been infected with lues; it is not pathognomonic of paresis.* It is, however, a warning of the danger of paresis and tabes (Gowers, Babinski).

A sluggish light reflex is an incomplete stage of the Argyll-Robertson pupil and is frequently seen in incipient paresis. Loss of light reflex is due to the action of a particular toxin on certain nerve cells or fibres, the exact position of which is still a matter of doubt; *it is not always due to an actual degeneration, since it may come and go from time to time* (Robertson). Argyll-Robertson pupil may occur in acute alcoholism and hysteria. Loss of sensory light reflex—a dilation caused by pain as from a prick of a pin near the eye—Bevan Lewis regards as one of the earliest pupillary symptoms in paresis. Loss of light reflex and accommodation may occur at the same time or accommodation alone be lost.

Most important of the motor disorders are the epileptiform and apoplectiform seizures; the former usually manifest themselves as a cortical epilepsy, less frequently there is a severe general convulsion. The body temperature is generally elevated during a seizure.

From twenty to one hundred attacks may occur in twenty-four hours, and the seizures may occur continuously for a fortnight. Almost invariably after the cessation of these attacks, there is a decided increase of the mental weakness. The apoplectiform seizures occur suddenly with loss of consciousness, stertor, coma, rigidity or flaccid paralysis; there may or may not be residuals. On the sensory side there are similar attacks—psychic equivalents, characteristic of essential epilepsy. Any of these forms may occur at any stage of the disease. The apoplectiform attacks belong usually to its earlier period; in the beginning they are usually light and become more severe as the disease progresses. Paretic seizures are probably the result of new invasions of the organism rather than due to vague metabolic changes and cerebral congestion (Moore).

In 75 per cent. of the cases of paresis, the knee-jerks are exaggerated, sluggish or lost (Franz); when exaggerated, the Babinski and ankle clonus are often present. There is a difference between the two sides in 18 per cent. of the cases (Räcke). The Achilles jerk disappears before the knee-jerk. De Montyel found the sexual power lost in 79 per cent. and increased in 15 per cent. of his cases. The liability to broken bones, hematoma of the ear, and pneumonia, cannot be too strongly emphasized; the hematoma auris and fragility of the bones are due to the deranged metabolism of the paretic. Temperature variations are usual; the two sides of the body may show a difference; there may be a marked elevation without any appreciable cause; in a certain proportion of the cases, it is the direct result of the brain lesion, more frequently it is due to constipation, a distended bladder, broken ribs, or pneumonia; toward the close of life it is subnormal. Sleep is greatly disturbed in the beginning and during the excited stage; later there may be somnolence so that the patient is awake only when eating or being talked to. The appetite is greatly impaired at first, the patient losing weight until the acuteness of his illness is past; later it becomes ravenous and there is rapid taking on of flesh—the obesity peculiar to paresis. The end is characterized by extreme wasting.

Our review of the various types will be as brief as a fair degree of accuracy will permit. Fortunately, thanks to the kindly courtesy of your asylum authorities, we shall be able with these five patients to illustrate quite freely the clinical syndrome of this disease.*

*Through the courtesy of the first assistant physician of the Brandon Asylum who placed at our disposal five patients for the purpose, we were enabled to present many of the clinical aspects of paresis in a very satisfactory manner. Three of the patients were clearly paretic, one was doubtful and one a case of cerebrospinal lues.

THE DEMENTED TYPE. Progressive mental deterioration with motor paralysis is its salient feature. The intellectual and social fabric speedily crumbles to ruins; mental dullness, loss of concentration, moodiness, irritability, confusion, disorientation, inability to recognize those around them, are some of its chief characteristics. Convulsions are more frequent and remissions more rare than in the other varieties. Transient delusional states are common. They may be suicidal. Depressed and expansive states at times assume marked prominence. They are gluttonous and their desire for drink is inordinate. This form comprises 53 per cent. of Kræpelin's Heidelberg cases.

THE MELANCHOLIC TYPE. This possesses in a great degree many of the features of the depressive phase of manic-depressive insanity with mental deterioration superadded. The patient is a prey to all kinds of hypochondriacal ideas and is subject to vague and indefinite sensory perversions. The delusions may be either accusatory or persecutory, and are often accompanied by hallucinations, especially of hearing. There may occur grandiose ideas, stupor or periods of intense anxiety. A marked catatonic state is sometimes present. Convulsions are more rare and the duration of life less than in the preceding type. Twelve of Kræpelin's Heidelberg series belonged to this group.

GRANDIOSE FORM (classical paresis). Either depression or exaltation may be the first symptom. These patients always "feel fine" and revel in grandiose ideas of the most senseless and fantastic nature; as illustrated by our patient with his bank of gold, dreadnaughts and other wonderful possessions. A patient of mine in the last stage, helpless and confined to bed, said he could whip Corbett and saw seven cords of wood daily; another stated he had a horse that could trot across the Atlantic in three minutes, and still another was in the habit of giving me million dollar checks when I called. The grandiose ideas are not so marked in women as in men. Paretics are readily distractible; a little skillful suggestion will turn their morbid fancies in any direction. They are liable to attacks of great excitement, when they are dangerous as wild animals. Hallucinations are not infrequent. The excitation may be tinged with a fringe of depression or hypochondriasis, indeed the clinical picture may for a time assume the typical characteristics of the manic-depressive syndrome. There is a blunting of the moral sense and a loss of all regard for personal appearance. The exaltation may last for years or it may recede, and were it not for the intellectual impairment the patient might be considered prac-

tically normal. The group comprises 36.3 per cent. of the Heidelberg series, and very properly includes the agitated type, since the latter is only the expansive form pursuing a stormy course. The most excited cases are called "galloping paresis," and because of the intense excitement they quickly become exhausted and die in a few days or weeks. Convulsions are less common and remissions more frequent than in the preceding groups.

Juvenile paresis differs from that of the adult form chiefly as to time of incidence and nature of the clinical syndrome. The pathological findings are the same in both. It develops usually during adolescence, although it may occur between the fifth and sixth year. There are often notable physical and mental defects in the child preceding the manifestation of the disease. Children who dement without apparent cause are probably instances of this condition as are also the so-called "dementias associated with epilepsy" in childhood. The clinical symptoms, while often those of the dementing form, frequently are so vague and indefinite that only by the aid of laboratory methods is it possible to arrive at a diagnosis. Convulsions are very frequent. Kræpelin reports four hundred and fifty in a single week in one of his patients.

The termination of these mental complexes constituting paresis is ultimately death. Dementia becomes absolute, there is extreme wasting and existence is purely vegetative; cardiac failure ends the tragedy.

The duration of paresis may vary from a few months to many years (thirty-two years, Alzheimer's case). Fifty per cent. die in one year; 75 per cent. in two years, 90 per cent. in three years (Robinson). Remissions occur in 20 per cent. of the cases; they are seen in all forms, but are most frequent in the grandiose type. They may occur suddenly or be of gradual evolution. It is usually a matter of weeks or months for the remission to reach its full development, and its duration is usually of a few months; three or four years is uncommon, while many years is most exceptional. Among these latter are Halban's patient, eight years, Dobrschansky's fourteen years, and Tuzcek's twenty years.

According to Nissel and Alzheimer, there is in paresis a definite anatomical process which is not found in other forms of nervous syphilis (Jelliffe). In long-standing cases the brain is atrophied and the dura is adherent in patches to the skull. The cortex is greatly shrunk so that its breadth is reduced often by one-half, and the destruction taking place in it is greater than in any other disease. The pia is cloudy, thickened, infiltrated and adherent, so

that when it is removed the cortex is badly lacerated. Periarteritis and infiltrations by lymphocytes is usual. The ventricles are dilated and the ependyma is covered with hyperplastic granulations of neuroglia. Taken singly, the changes in the cortex have no differential significance since they may be observed in other diseases, but when considered in their totality they are diagnostic of paresis. Accumulations of plasma cells in vessel sheathes are of all cortical changes the most important, because they are never absent in general paralysis, and they show a characteristic distribution. Rod cells in the neighbourhood of the vessels are seen in other diseases but in smaller numbers and not remote from the meninges as in this disease (Kräpelin). New vessel formation, endothelial proliferations, grave cell alterations, with the associate destruction of nerve fibres and neuroglia overgrowth, all add to the completeness of this pathologic picture. Loss of nervous tissue is generally accompanied by a corresponding increase of the neuroglia. Similar, but not so severe changes, are seen in the cerebellum, basal ganglia, pons, medulla, spinal cord, sympathetic ganglia, peripheral nerves, etc. Straub found in 82 per cent. of his cases a diseased aorta. The bones and body viscera are usually affected in a marked degree.

The diagnosis of paresis is frequently beset with great difficulty: a mental trouble occurring in a middle-aged man for the first time should suggest paresis, especially if there is a history of a previous lues. The mental symptoms may be so varied, confused and shifting that they suggest a combination of "disease pictures" rather than one of the best known types in psychiatry. Each clinical form may, chameleon-like, assume the characteristics of any of the others. But of still more importance are the neurological signs, chief among which are Argyll-Robertson pupil and irregularity of outline of pupil, optic atrophy, sensory disturbances, notably hypalgesia during inattention, speech defects (awkward and anxious patients often show these resembling paresis), loss and exaggeration of knee-jerk, epileptic and apoplecticiform seizures, etc., some of which may precede by years the onset of the disease. They are probably the index of a syphilitized nervous system, the degenerative process not yet having begun. That the diagnosis of paresis cannot be made with accuracy from the clinical syndrome is shown by Southard who followed to the post-mortem room and laboratory forty-one well marked cases in which the entire medical staff of the asylum agreed that on clinical grounds the diagnosis of paresis was certain. His examination proved that there were six errors, or 15 per cent. If incipient cases were included with those that are

well marked the error would certainly be very much greater. It is only by calling to our aid the sero-biological reactions that we can with any certainty arrive at a diagnosis. When all four reactions are positive, especially if small quantities of spinal fluid—from '05 to '2 cc. (Jelliffe)—are used, the case is almost invariably one of paresis. A positive reaction on the part of the blood serum and spinal fluid may occur in all forms of nervous syphilis—in cerebrospinal lues, paresis and tabes, and under such conditions it must be interpreted in the light of the clinical symptoms. Both fluids may give a negative reaction in stationary paresis. In one per cent. of the cases the blood serum, and in six per cent. the spinal fluid, reacts negatively (Robertson). Occasionally the reaction is that indicative of cerebrospinal syphilis, viz., positive blood serum with lymphocytosis and globulin excess. The diagnosis of paresis, which is equivalent to passing a death sentence, should not in our present state of knowledge be lightly made.

The abolition of paresis lies in the prevention of syphilis, and writers are sadly at variance as to whether antisymphilitic treatment will prevent paresis. Fournier believed it possible. According to him only five per cent. of syphilitics received adequate treatment, while on the other hand, Kriss, Schuster and Junius and Arndt are far from being convinced as to this efficacy of mercurial treatment. The early recognition, in the so-called preparetic stage, probably the incipient period of the degenerative process, is of great importance, since this is the one time favourable for successful therapy. Availing ourselves of the modern methods, we should be governed by Fournier's dictum: "*Strike hard, quick and often.*"

In the presence of paresis and tabes, there is some excuse for therapeutic nihilism. The former is more intractable than the latter to treatment, and both are much less amenable than the other forms of nervous syphilis. Generally speaking, the longer syphilis has existed the more resistant it is to treatment, and paresis is one of its late manifestations. Jelliffe aptly says: "It is a question of the inaccessible spirochete." Its habitat in paresis is at a distance from blood vessels and lymph channels; the latter being obstructed interferes with flow of lymph as well as the transmission of therapeutic agents. Thus, the pallida unmolested works out its lethal purpose.

Remissions are nature's attempt at a cure. They develop spontaneously, natural episodes as it were in the course of the disease. The quiet and regular hours of a hospital regime are conducive to their occurrence. Various therapeutic measures, it would seem,

are capable of artificially inducing them; viz., first, the prolonged injection of small doses of tuberculin, from 0.01 to 0.1 mg.; second, the injection of bacterial toxins. Kræpelin suggests that since septic organisms hinder the propagation of the spirochetes, it may be possible to use them as allies in the fight against paresis. Third, the use of nucleic acid and metallic ferments. Fischer, every three to five days, injects his paretics with 0.5 gramme of the sodium salt of nucleinic acid in 10 per cent solution. He reports four remissions as following this treatment in twenty-two cases. Thus it is believed that by the use of these agents we produce leucocytosis and stimulate the natural defense of the organism against the spirochetal onset. The period during a remission, when all medical care and oversight are discarded because they are considered irksome and unnecessary, is in reality the time when treatment should be most vigorously pushed. At present the cure of paresis can neither be affirmed or denied. An ambition to accomplish this will ever be the best stimulant to a persistent endeavour. There is not the slightest doubt that treatment can influence, even if it does not arrest, the paretic process, as is shown by a decrease in lymphocytosis and a diminution in the intensity of the Wassermann reaction. This may become negative and remain so a year or more, as it did in Alt and Willig's cases.

When we recall what has been accomplished in that hitherto incurable disease, sleeping sickness, one ought not utterly to despair of paresis. In the last few years, Martin, in the Pasteur Hospital in Paris, has treated forty cases of the former; of the first twenty patients, eleven died; of the next ten four died, while all of the last ten cases recovered. Two patients of the last series were under treatment for more than three years. These remarkable results were due to improvement in the method of treatment (Chauffard).

Since in paresis we are dealing with a desperate disease, Robertson believes that we are justified in employing desperate remedies; that we should be governed by the same principle that influences the surgeon in hopeless conditions: while he counts on almost a certain fatality, he feels justified in assuming the risk. The ethics in each instance are the same, and we should not hesitate at radical procedure even though death sometimes result.

The administration of salvarsan is not without danger. Gibbard and Harrison are authority for the statement that up to 1912 about one hundred and fifty deaths have been due to it, but that during the same period less than a dozen have died from the Herxheimer reaction, and they do not agree with Ehrlich's opinion

that this is due to a liberation of endotoxins, but rather to an overdosing with salvarsan of a patient peculiarly sensitive to arsenical preparations. According to them also, the neurorecidives are not in any sense a neurotrophic action of salvarsan, but should be regarded as evidences of a syphilitic relapse.

Since the researches of Noguchi and Moore and Marinesco, my views in regard to therapy have undergone a radical change. My conviction is that in every case except the very advanced, modern methods of treatment should be vigorously applied; nothing could be more absolutely futile, even fatuous, than the routine use of the combined treatment so generally used. Long experience has demonstrated that mercury is of no value in clearly developed paresis. Kræpelin, indeed, believes it to be contra-indicated, as he has observed acute excitement with rapid loss of strength follow a course of inunctions. Bucholz also reports two cases of "galloping paresis" developing under the same conditions.

With rare exceptions the conventional dose of salvarsan, 0.6 gramme, may be given, always intravenously. Gennerich regards an intensive course of salvarsan as consisting of 4 grammes, while on the other hand Dreyfuss advises a maximum amount of from 6 to 9 grammes, distributed during a period of from eight to twelve weeks. Are we then justified in our endeavour to reach the spirochetes burrowing among the nerve cells in the cortex, in using or even in increasing these massive doses of Dreyfuss? Certainly the patient's welfare will be in no manner compromised, since untreated his malady has only one inevitable end—death.

THE INTRASPINOUS METHOD. The choroid plexus exerts a marked control over the composition of the cerebrospinal fluid (Flexner). Relatively few drugs are capable of passing this barrier; notable among these is urotropin which does so freely, while on the other hand potassium iodide entirely fails to do so. Only detectable quantities of arsenic, which quickly disappear, are observable after the intravenous injection of salvarsan. The cerebrospinal fluid occupies the subarachnoid spaces and communicates with the canalicular system surrounding the vessels and nerve cells of the brain and spinal cord (Mott), and furnishes the most direct path of access for curative agents. This fluid must be made the purveyor of these substances, for only in this way can we reach the otherwise inaccessible nervous tissues. The intraspinous method, therefore, is the logical procedure in the treatment of syphilitic infections of the central nervous system.

Experiments on rabbits have shown that arsenic injected intra-

spinally is a dangerous procedure and not to be considered; the only way to introduce it with safety into the rachidian fluid is by the use of salvarsanized serum.

Serum derived from patients suffering from secondary syphilis, who three days previously have been injected with salvarsan, or serum from the patient himself an hour after receiving an injection of 606, has been used intraspinaly for the purpose of bringing the spirocheticidal action of the drug into immediate contact with the membranes. Robertson, of the Royal Asylum, Edinburgh, and Swift and Ellis, working in the Rockefeller Institute Hospital, have for some time been conducting some remarkable investigations along these lines. The former uses the salvarsanized serum in addition to, and in the intervals between, the salvarsan injections. The dose varies greatly, all the way from 3 to 30 cc. according to the technique employed in the preparation of the serum. The spirocheticidal action of the serum of salvarsan-treated patients is markedly increased by heating at 56° C. for thirty minutes (Swift and Ellis). Before making the injection, from 5 to 15 cc. of spinal fluid is withdrawn "until the pressure falls to 30 mm. of spinal fluid." The trying out of this method will require time and patience and will be watched with great interest.

NOTE.—Dr. Taylor informs me that in the out-patient department of neurology of the Massachusetts General Hospital, Dr. Ayer has for some months been using intraspinal injections, especially in the treatment of tabes, and that he has obtained certain definite results. Lymphocytosis may practically disappear and the Wassermann in the blood serum and spinal fluid may be changed to negative. Treatment does not seem to arrest the progress of optic atrophy in tabetics.

Myerson, of the Psychopathic Hospital, Boston, reports under observation seven cases of paresis in which there was no question as to diagnosis, and one case of "clinical paresis" in which the spinal fluid was negative; the possibility in this patient of cerebrospinal lues must be considered.

In all these cases the pathological process characteristic of general paresis was modified by the use of salvarsanized serum, and according to him the blood serum and spinal fluid may become negative and remain so indefinitely; there may also occur clinical betterment.

A well marked case of paresis, now under our care, has been remarkably benefited by the intraspinal method. Swift and Ellis in

the October issue of the *Journal of Experimental Medicine* express the opinion that we should "confine our efforts at the local therapy of syphilis of the central nervous system with salvarsan to the use of such salvarsanized serum."

TO PROVE or disprove the value of strychnine as a rapid cardiac stimulant, Parkinson and Rowlands studied the immediate effect of the subcutaneous injection of one-fifteenth of a grain of strychnine sulphate on the blood pressure, rate and regularity of the pulse, rate of respiration, and the general condition, in a series of fifty patients presenting signs of severe heart failure. In one half of the cases the rhythm was regular, in the other half the auricles were fibrillating. MacKenzie's ink polygraph was used to record the pulse and respirations, and the mercurial sphygmomanometer devised by Leonard Hill was used to record the systolic blood pressure. Records of the pulse, respirations, and blood pressure were made immediately before the injection and every five minutes for an hour afterwards. No evidence of change in the blood pressure, rate of the pulse, rate of respiration, or general condition was found, and these workers conclude that strychnine has no effect which justifies its employment as a rapid cardiac stimulant in cases of heart failure.—Abstract, *Quarterly Journal of Medicine*, Vol. VII, No. 25.

GASTRIC HYPERACIDITY

BY F. W. ROLPH, M.A., M.D.

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THE term hyperacidity, as commonly applied to stomach conditions, is unsatisfactory. In the first place it is used to denote both a group of clinical symptoms and a chemical anomaly, either of which may be present without the other, and further there is no definite understanding as to the amount of acid necessary to constitute a hyperacid state.

Recent work has given us new ideas as to acidity in general and stomach acidity in particular. It has been shown that the acidity of the gastric juice depends upon the concentration of hydrogen ions present, and that this hydrogen ion concentration cannot be measured by titration with an alkali. Apart from the general incorrectness of the titration values, other factors come into play. Different indicators give greatly differing results, especially where we are not dealing with a pure acid, but have albumoses and peptones present; and even with the same indicator it is often difficult to judge the end point correctly. In using dimethylamidoazobenzol and phenolphthalein, as recommended by Toepfer, we take the end points as canary yellow and deep red, respectively, and in doing this we unquestionably run past the neutral point towards the alkaline side. Alizarin and litmus have both difficult end points to determine, while phloroglucin-vanillin, though the most exact of the free hydrochloric acid reagents, entails in its employment the tedious steaming process after each addition of soda.

The estimation of the hydrogen ion value by electrolysis is of course out of consideration as a general clinical procedure, but Michaelis and Davidsohn have formulated a method of determining the acidity by means of indicators, which is very useful for practical work. Their original plan included seven indicators, but for ordinary purposes only four are needed, namely, methyl violet .03% aqueous solution, tropæolin .25% solution in 50% alcohol, congo red

Read at the Annual Meeting of the Canadian Medical Association, London, Ont., June, 1913.

·125% aqueous solution, and methyl orange ·25% aqueous solution.

The following table shows the hydrogen ion value in grams per litre.

	·1	·033	·01	·0033	·001
Methyl violet.....	Green	Green	Green	Green blue	Blue
Tropæolin.....	Burgundy red	Burgundy red	Orange	Orange	Yellow
Congo red.....	Blue p'p'te	Blue p'p'te	Blue p'p'te	Blue violet	Blue violet p'p'te
Methyl orange.....	Red	Red	Red	Red	Red

	·0001	·00001	·000001	·0000001
Methyl violet.....	Violet-Blue	Blue Violet	Violet	Violet
Tropæolin.....	Yellow	Yellow	Yellow	Yellow
Congo red.....	Dirty red	Red	Red	Red
Methyl orange.....	Orange	Yellow	Yellow	Yellow

Place in each one of four test tubes 1 c.c. of filtered gastric contents after a test breakfast. To the first add one drop of the methyl violet solution, and to the second, third, and fourth, similar amounts of tropæolin, congo red, and methyl orange, respectively. Notice the resulting colourations, and from the table estimate the hydrogen ion concentration. The authors have figured out that

·03 and over means hyperacidity and ·0014 and under hypoacidity; thus, roughly speaking, the first two columns mean a hyperacid juice, the second two are normal, and below that we have varying degrees of hypoacidity.

I have used this method in comparison with the titration method in a large number of cases, and have come to place great reliance upon its efficacy. In the majority of cases, of course, it runs concurrently, or nearly concurrently, with the soda neutralization values, but occasionally it gives differing results, and results I think, approaching more nearly the clinical truth. A few of these I may mention:

I. Man, aged fifty-four, severe acid gastritis; dimethylamidoazobenzol value, 35; phenolphthalein value, 60; indicator value as above, ·033.

II. Man, aged thirty-five, no gastric symptoms: dimethyl values, 45 to 50; phenolphthalein values, 75 to 85; indicator value, ·01.

III. Woman, aged forty-two, gastric ulcer: dimethyl value, 23; phenolphthalein value, 40; indicator value, ·033.

Let us consider the symptoms usually ascribed to hyperacidity, and make some enquiry into their causation.

1. The presence in the epigastrium, one to three hours after meals, of a sensation varying from uneasiness, or an "all gone" feeling, to actual pain. This symptom has generally been accredited to the action of the highly acid contents upon the gastric mucous membrane, or where the contents are not excessively acid, to the increased sensitiveness of the mucous membrane. Favouring this theory is the fact that the emptying of the stomach (by tube or vomiting) or the administration of alkalis or food, will almost immediately relieve the distress; against it is the observation of Bence Jones, that a solution of tartaric acid would cause a sensation in the œsophagus but not in the stomach, and also the researches of Hertz, who showed that the mucous membrane of the stomach, whether intact or ulcerated, is quite insensitive to dilute acids. These apparently contradictory observations, I think, can be reconciled, but first let us notice some of the recent important contributions to our knowledge of the physiology and pathology of the stomach.

The investigations of Cannon and of Carlson have demonstrated that hunger pains are coincident with, and apparently due to, contractions of the gastric musculature, and that these contractions can be temporarily inhibited from the oral cavity, by mastication of food or even of indifferent substances. Hertz has stated that

gastric pain is frequently caused by excessive tension on the muscle layers in the prepyloric portion of the stomach. No less noteworthy than these is the widely recognized work of Eppinger and Hess on vagotonia. They endeavour to show that certain people, "vagotonikers" so-called, are subject to extraordinary vagus action and show corresponding rather definite group of symptoms. These symptoms of vagus hyperirritability include both gastric hyperacidity and excessive gastric peristalsis.

We can now come to a conclusion why discomfort and pain accompany hyperacidity. The peristalsis is excessive, and the advancing contractions cut deeper and deeper into the stomach lumen as the pylorus is approached; at the same time the free hydrochloric acid, more abundant than normal, reaches the duodenum and firm closure of the pylorus results. The great tension to which the muscle layers in the pyloric part of the stomach are subjected, results in pain.

Emptying the stomach of course affords relief, because the pylorusward peristalsis at once ceases, and the departure of the acid contents abolishes pyloric spasm. Similarly alkalis and food compel a temporary cessation of peristalsis from a "reception dilation," and permanent relief follows the neutralization of the acid.

2. Pyrosis. Unlike the mucous membrane of the stomach, that of the œsophagus is susceptible to painful chemical irritations, and the effects of this susceptibility are well demonstrated in hyperacidity. The pain-producing substance is generally understood to be the hydrochloric acid, but Hertz denies this, and places the onus upon alcohols, formed during gastric digestion. The commonest symptom is pain beneath the sternum, but more remote effects may be in evidence, such as a gnawing pain under the right scapula, soreness in the muscles of the neck, and even, as Chambers pointed out some years ago, quite typical clinical signs of lumbago. A point which may be mentioned here, in relation to this regurgitation of stomach acids, is the suddenness with which it often takes place, when the gastric distress is at its height, as if the excessive intragastric tension had forced the sudden opening of the cardiac orifice.

3. Excessive secretion of the salivary glands. This is a frequent condition in hyperacidity, and appears to be caused by the irritation of the glands with the acid present in the oral cavity. It is usually most marked at night, when the patient may awake to find a tasteless watery fluid pouring from his mouth. If the saliva of these patients is tested, it will often be found quite acid

to litmus, and to this, I think, as much as to the superabundance of acid in the stomach, can be accredited the poor starch digestion.

4. Constipation. A condition of spastic constipation (all constipation is basically atonic, but for clinical purposes it is well to recognize a superimposed spastic form) is the rule in hyperacidity, and it is probably due to overaction of the vagus and its congeners, producing spasm in the intestines as in the stomach.

5. Vaso-motor symptoms. Carlson has shown that simultaneously with the contractions of the stomach, which cause the sensation of hunger, occur vaso-motor instability and giddiness, which are so common in these patients, towards the end of gastric digestion.

Of special interest are the associations of hyperacidity with other conditions:

Hyperacidity and gastric and duodenal ulcer. What bearing has hyperacidity on the formation and chronicity of peptic ulcers? Until recently it was given a big, if not the biggest, etiological rôle, but careful consideration casts doubt on this hypothesis. It must be remembered that for the mucous membrane of the stomach to undergo digestion, there must be first some abnormality in that mucous membrane, and granted that abnormality, then a peptic activity of very moderate grade would be sufficient to cause digestion and hence ulceration. Furthermore, it has been shown that hyperacidity does not conduce to peptic activity so much as normal acidity, for Michaelis and Davidsohn place the optimum at a hydrogen concentration of .016.

There is more reason to believe that the acid has a place in the prevention of healing and the conversion of the florid ulcer into a chronic, indurated one, but even here is the consideration that in chlorotic conditions, where acidity is almost invariably high, gastric ulcers heal most promptly and regularly, while on the contrary, in people over thirty, in whom we not seldom obtain an acidity that is normal or even subnormal, our difficulties in effecting a cure are intensified.

Von Bergmann, in a recent article, agrees with Eppinger's ideas of the coincidence of ulcer of the stomach and vagus hyper-irritability, and lays stress upon the causal factor of the local ischæmia following the excessive contractions. He states that out of sixty gastric ulcer patients, fifty-eight showed a definite vagotonic state, also he gives the results of Westphal's animal experiments, in which, by injecting the powerful vagus stimulants pilocarpine and physostigmine into rabbits, he was able to produce typical peptic ulcerations.

It is probable that the causation of gastric and duodenal ulcers is multiple, and that injuries, toxæmia, cardiac and arterial disease, anæmia, and vagus hyperirritability, either separately or combined, are at the bottom of most cases. An important difference between the gastric and duodenal cases has been shown by the Roentgen rays. It is that, while in stomach ulcers there is nearly always food retention, in duodenal ulceration, in spite of pyloric spasm, the stomach is emptied much more quickly than normal. This would account for the more frequent appearance of hunger pain in the duodenal cases.

Hyperacidity and acid gastritis. As is well known, the majority of cases of chronic gastritis are associated with subacidity, but in a fairly large group, hyperacidity is present. As in both forms the causes are the same, the difference must lie in the reaction of the individual, and can be explained by the phrase, acid gastritis is the gastritis of "vagotonikers."

Hyperacidity and hypersecretion. Much debated has been the relationship between these two, but they differ probably only in degrees and not in origin. The best standard for the presence of hypersecretion is the finding of more than 20 c.c. of strongly acid, clear fluid in the fasting stomach. The majority of cases of severe hypersecretion will be found to be associated with organic changes in the alimentary tract.

Hyperacidity and gall-stones. The association of these two conditions has now become firmly established, and as a general rule the stomach condition has been set down as a reflex from the diseased gall-bladder. Kehr, who has had a very wide experience with cholelithiasis, states that only five per cent. of individuals with gall-stones suffer from symptoms of any kind referable to them, and only one per cent. have symptoms at all typical or severe. Again, cases are recorded where, in spite of marked attacks of gall-stone colic, no stone is found at operation. Is it not probable, in some cases at any rate, that the onset of colic is a spasm produced by nervous influences, the same influences tending to produce in the stomach increased acidity and increased peristalsis?

Hyperacidity and appendicitis. One might say that appendix dyspepsia has sprung into fashion to explain the cases of indigestion not due to gall-stones. That an irritable focus in the bowel may cause a reflex spasm of the pylorus goes without saying, but in chronic appendicitis, hypoacidity is almost as frequent as the opposite condition, and normal gastric digestion more frequent than either. It must be remembered too, that mucous colitis is exceedingly common, and presents a similar picture to appendicitis.

Hyperacidity and pregnancy. Very prevalent are the symptoms of excessive acidity in pregnancy, and beyond the rather vague one of reflex irritation, a reason is difficult to provide. Pain is not so much in evidence as heartburn and waterbrash, and it has appeared to me that here we have the chemical anomaly in its purest form.

In regard to the therapy of hyperacidity, I think that too much attention has been given to the gastric mucous membrane. If it is fundamentally a nervous condition with which we have to deal, then such treatment is unnecessary and useless. Alkalis, to combat the symptoms, are indicated, as they prevent or lessen pyloric spasm, pyrosis and waterbrash. They are best exhibited in the form of a combination of magnesia and citrate of soda.

Only reasonable care is needed in the diet, too strict a dietary does more harm than good. Milk is to be recommended because of its very high acid capacity. Most of its protein and phosphates exist in combination with calcium, and when this combination is broken up by the acid of the gastric juice, the freed calcium neutralizes the acid. I have found out that 10 c.c. of ordinary milk, neutralized to phenolphthalein, will take up about 25 c.c. of 2% hydrochloric acid, before a reaction for free acid is obtained. Peptonized milk, due to its content of amino acids, has a combining power even greater than the normal milk.

The drug treatment of hyperacidity, apart from the alkalis, consists in the giving of belladonna and its derivatives, atropine and eumydrin. Their principal action is not, as was formerly thought, on the gastric glands, limiting secretion, but in the production of a sedative effect on the pneumogastric nerve.

It is when a complicating gastritis or ulceration is present that further therapeusis is advisable, and bismuth, olive oil, silver nitrate, hydrogen peroxide, and neutralon all have their uses. Neutralon is a preparation of aluminum silicate, which is broken down by the stomach acid with the formation of aluminum chloride; it not only has a powerful neutralizing effect, but is also astringent and antiseptic.

Constipation forms an important hindrance to recovery, and must be treated. For it the artificial Carlsbad salt will be found useful.

Organic changes in other parts of the abdomen will sometimes be found, more frequently, in my experience, in dispensary patients than in private practice. Surgical interference will often cause apparent cure, but unfortunately this is often only temporary. It is

a peculiar fact that a surgical operation, which seemingly has no bearing on the stomach condition, will yet remove the symptoms. This is well shown in the following case: a woman with gastric ulcer symptoms well marked (pain, tenderness, stasis, vomiting, repeated hæmorrhages) was taken to the hospital and had opened a small acute abscess in the thigh. Prior to the operation, treatment had been ineffectual, but since leaving the hospital, the symptoms of ulcer have not recurred, although nearly two years have elapsed.

In contrast to the good results sometimes achieved by the surgeons, are the cases in which adhesions follow abdominal operations, and leave the patients in much worse condition, as regards their digestion, than before.

A fairly frequent cause of hyperacidity is the presence of a small epigastric hernia and the possibility of this must always be kept in mind.

That chemical hyperacidity is not in itself of great importance, is demonstrated by the fact that even with the abatement of symptoms, the acidity usually persists. The treatment of the condition is the treatment of the underlying nervous instability, for in its simple form it is a constitutional weakness, and to the therapy of this our effort must be bent.

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THE plans for the new Jubilee Hospital at Victoria have now been passed. They include an administration building, two public wards, a laundry and a power house, and a service building.

THE PERIOSTEUM

BY W. E. GALLIE, M.B., AND D. E. ROBERTSON, M.B.

Toronto.

SINCE the time of Duhamel and John Hunter, it has been the belief of anatomists and surgeons that the periosteum is osteogenetic. The experiments upon which this belief was based appeared to be conclusive, and it is only recently that doubts have been cast upon the accuracy of the deductions.

In 1739 Duhamel reflected the periosteum from the bone of a growing animal and fitted around it a silver ring, over which he sewed the periosteum. After the lapse of a period of months he found the ring completely covered with bone, and from this observation concluded that the periosteum secreted bone. This view was not disputed until in 1912 Sir Wm. Macewen published his work, "The Growth of Bone," in which he described many experiments which seemed to demonstrate that the periosteum cannot be considered osteogenetic, and that it must be viewed merely as a limiting membrane of much the same nature as the sheath of a muscle or the capsule of one of the viscera. Since the publication of this monograph considerable controversy has arisen, but the evidence brought to support the contentions of the disputants has been largely clinical in character, and not much experimental work has been published which would be of assistance to us in formulating a definite opinion.

The experiments of which a description appears with this paper have been chosen from a series which the authors have been conducting in a general study of the regeneration of the bone. Reports of the results of these experiments will be published later. In the meantime sufficient data have been gathered to warrant the expression of an opinion.

The post-mortem specimens are here for examination, and while it will be necessary for you to accept without further proof our description of these specimens as made at the time of their recovery, it will be seen that they have been sufficiently well preserved to demonstrate most of the important points.

Experiment No. 1, May 16th, 1912. Adult fox terrier.

Operation:—Incision through skin over shaft of radius, periosteum incised and carefully reflected throughout circumference of bone, and for a space 2 in. wide. This was removed altogether and a piece of tin foil half an inch wide was wrapped about the shaft in the middle of the denuded area. The muscles were then allowed to overlie the foil, and the skin edges approximated. Healing took place by primary union. On October 19th, 1912, the specimen was recovered. No thickening had occurred. Over the foil a fibrous membrane had developed, resembling the periosteum in experiment No. 2. Beyond the edges of the foil, this membrane was continuous with a similar membrane which was closely adherent to the bone. At the edges of the area which was deprived of periosteum this fibrous membrane became continuous with the periosteum proper. Under the foil the bone was smooth and normal in appearance.

From this and similar experiments, it would appear that the injury to the bone produced by the removal of the periosteum is very slight. A new fibrous sheath immediately develops to take the place of that which has been removed, without any marked change in the subjacent bone.

Experiment No. 2, June 5th, 1912. Adult fox terrier.

An incision three inches long was made along the inner anterior border of the right fore leg. The muscles and tendons were retracted and the periosteum of the radius incised for a distance of two inches. The periosteum was then carefully raised with a smooth blunt instrument and removed without injury to the bone, over seven-eighths of the circumference of the radius. A strip of tin foil three-fourths of an inch wide was wrapped around the bone in the centre of the denuded area. Over this the periosteum was stitched with No. 0 sterile catgut, the skin edges approximated, and a dressing applied. Healing occurred by primary union. On October 19th, 1912, the specimen was recovered. No thickening whatever had occurred. The periosteum was lying as originally placed, over the tin foil, and was freely movable over it. The bone under the foil was quite smooth and normal in appearance. There had been no new bone formation over the foil.

This experiment has been repeated several times with slight variations, and always with the same results. From it one may conclude that the periosteum may be stripped from the bones of the dog without production of new bone, either by the endosteum or the periosteum. To meet the possible objection that the foil exerts an inhibitory action on the periosteum, preventing bone formation, in several experiments, as for example in experiment

13 and 6, steel plates and wax were placed under the periosteum instead of the foil. The results in these cases were the same, there being no bone formation over the foreign body.

Experiment No. 8, December 14th, 1912. Brindle bull pup, aged two months, weight 2.4 kilos.

Incision over radius as in former experiments. Periosteum split longitudinally, and reflected for a distance of one and one-half inches. A silver wire was then passed around the bone and the ends twisted together until it formed a closely fitting ring. A quarter of an inch above the ring a sheet of tin foil was wrapped around the bone. Over the wire and the foil, the periosteum was stitched with catgut and the skin closed. On April 3rd, 1913, the specimen was recovered, that is nearly four months after the operation. Weight, five kilos. The periosteum lay over the foil and wire, as at the time of the operation, no bone having been produced under the periosteum. The ring lay in a distinct groove, resulting from the thickening of the surrounding bone. When the foil was lifted, it was found that under the foil the bone had thickened exactly as much here as elsewhere.

This experiment is a modification of Duhamel's and shows the fallacy of the deductions which he drew from his results. He concluded that as he found the ring buried in bone, the new bone had been laid down by the periosteum. The above experiment shows that the correct explanation of the burying of Duhamel's ring is that the new bone grows up from the neighbouring endosteum, first forming a groove, and that ultimately the two sides of the groove meet over the ring. The fact that the shaft of the bone thickened as much under the foil as elsewhere, eliminates the periosteum as a factor in the growth of the bone.

Experiment No. 7, November 28th, 1912. Fox terrier pup, aged five months.

Incision as in former experiments. After the reflection of the periosteum, a slot was made through the shaft, holes being drilled first and these connected by means of a fine saw. This slot was then filled with warm paraffin. The wax was made flush with the surface of the bone and the periosteum stitched over it. Specimen recovered February 21st, 1913. Periosteum found lying over the wax, just as when the operation was performed. No evidence of new bone formation under the periosteum. The slot in the bone is still plugged with the wax. No change in the surrounding bone is apparent except that the edges of the slot are now rounded off and not clean cut as formerly. There is no thickening or roughening

of the bone about the slot where at the time of the operation the periosteum was raised. The slot itself is slightly smaller than it was when made and some of the wax has been extruded.

This experiment is very conclusive in showing that following injuries to the bone, such as fractures, saw cuts, drill holes, etc., the mass of new formed bone which develops about the seat of the injury comes out of the injured surface of the bone, and not from the periosteum.

Experiment No. 13, March 17th, 1913 Adult Irish terrier.

Incision as before. Periosteum reflected, and a transverse saw cut made through the radius. A steel plate was then applied, and fastened in position with nails. The periosteum was laid back on the plate and sewn up. June 10th, 1913, specimen recovered. The interesting point in the post-mortem findings in relation to this paper is that there was considerable thickening opposite the saw cut, the new bone having overlapped the edges of the plate and clamped it firmly down to the subjacent shaft. There was no evidence of new bone being laid down by the periosteum.

From the above experiments it will be seen that our findings agree with those of Macewen. We are forced to conclude that his view that the periosteum is merely a fibrous membrane without osteogenetic function, is probably the correct one. Osteogenesis appears to be solely a property of the endosteum, and appears to be as energetic in the absence as in the presence of the periosteum. Even as a source of blood supply the periosteum does not seem to be of great importance, for large areas of bone may be denuded without any apparent effect upon it.

There has been considerable discussion of late as to whether bone grafts should be transferred with the periosteum *in situ* or not. We have done many experiments with small grafts, always completely denuding the bone before making the transfer, and in no case has there been any difficulty in getting the grafts to take.

THE contagious diseases reported in Ottawa during the month of October were: tuberculosis, 6 cases; typhoid fever, 1 case; scarlet fever, 31 cases; diphtheria, 19 cases; measles, 6 cases; whooping cough, 2 cases; poliomyelitis, 1 case; mumps, 43 cases; and chicken-pox, 5 cases.

Case Reports

A CASE ILLUSTRATING DUCTLESS GLAND RELATIONSHIP

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THE interrelation existing between the ductless glands has attracted considerable attention within recent years. The present writer, in a previous communication to the *Canadian Medical Association Journal* (April, 1913), referred to this interesting subject, in reporting the autopsy findings of a case of acromegaly. Whilst our knowledge of this matter has not advanced much beyond the stage of conjecture and theory, yet it is hoped that the amount of earnest work devoted to it, at the bedside and in the laboratory, will bear results in a few years. In looking over the records of the cases of ductless gland disorders treated in the Royal Victoria Hospital, we were interested to learn that the symptoms were not in every case such as could be assigned to disturbances of only one of these structures, and that in the infrequent autopsies in such cases, pathological changes were observed in more than one of the ductless glands. Thus in the case of acromegaly referred to, the thick skin and subcutaneous tissues, covered with coarse hair were suggestive of myxedema, and the microscopic appearance of the thyroid sections showed atrophic changes in that structure. Likewise in a case of infantilism association with pituitary neoplasm, a report of which appeared in the *Archives of Internal Medicine* for May, 1913, the physical appearance of the patient led the clinicians to suspect as well a thyroid change, which suspicion was verified at autopsy. We refer to these two cases because they are fresh in our memory, and for the additional reason that they both showed at autopsy marked disturbances of the pituitary, thyroid, adrenals, and generative glands, as well as less marked changes in others of the ductless gland series.

There are, however, a large number of cases, and every practitioner of medicine will recognise the type, which, while they do not show pronounced symptoms of disturbance of any of the ductless

glands, yet are far from the enjoyment of perfect health. Thus, a female with little or no enlargement of a thyroid lobe, may become unduly nervous and irritable, particularly at puberty, during pregnancy, or at menopause, and perhaps have periods of sleeplessness, or diarrhœa, and yet have none of the other symptoms which we are inclined to associate with the disorder known as Graves's disease; or dyspnœa on the slightest exertion may develop in middle aged patients often without cough or cyanosis, the pulse becomes rapid and irregular, the tension high, the vessels sclerosed, and there is no history indicating an infection leading to valvular changes; or again the occurrence of amenorrhœa without the usual causes, and the acquirement within a short period of time of considerable adipose tissue on the part of women some years removed from the cessation of menstruation, may evoke suspicions of disturbance of the pituitary and probably of the ovary as well.

The following case illustrates excellently, both in the symptoms and the autopsy findings, one of the types of cases above referred to. Clinically the condition was looked upon as one of myocarditis, but the post-mortem findings inclined Professor Adami, who performed the autopsy, to consider the heart changes as due to disturbances of the thyroid and adrenals. Mrs. S. B., age sixty-five years, was admitted to the Royal Victoria Hospital with a normal temperature, pulse 164°, and respiration amounting to thirty-six to the minute. Her complaints were: shortness of breath, palpitation, and pain over the heart, eructations of gas, tremor of the body, weakness and sleeplessness.

For three years previous to her admission she had a fine tremor of the hands, later of the head, gradually getting worse. For the past year she had been unable to go upstairs without suffering from dyspnœa; this had become so bad that it was experienced on the slightest exertion, and made her an invalid. Three months prior to her admission, her appetite failed; and she was unable to sleep at nights. Five years ago she had symptoms akin to those of nervous prostration. She was always a hard worker. The clinical history records the removal of a uterine fibroid, but no trace of any operation scar was found at autopsy. There was hypertrophy of the right lobe of the thyroid, the time of onset of which was not certain, as her attention had never been directed to it; there was no exophthalmos. Her intelligence was good; occasionally she had dizzy attacks; was very nervous. Her skin was quite clear and her lips red. She had no cough nor cyanosis, but she had marked dyspnœa. There was good expansion of the chest; there were no

abnormal areas of dullness, but a few *râles* were heard at the bases of the lungs. She had a marked kyphosis; and œdema of the feet and legs was quite evident. Her pulse was 164, irregular and of high tension; vessels were somewhat sclerosed. The apex beat was 12 cm. from the mid-sternal line. There were murmurs heard at the apex and over the tricuspid area. She remained in the hospital six weeks, and during that time improved considerably, although her pulse rate only got below 100 on one or two occasions.

She returned to the hospital in about two months, in a much worse condition than on her first admission; her pulse could hardly be counted at the wrist, but the trembling which was so apparent during her first visit had disappeared, only appearing when she was excited. She had less nervousness though more weakness; no cyanosis; no cough, but marked dyspnoea. The œdema, however, was more marked, involving the legs and abdominal wall, and she also had dullness at the base of the lungs. She died following a severe localized infection of the left leg which developed two weeks after multiple punctures had been made to relieve the œdema.

There was found at autopsy in the gaunt, withered body: a dilatation of the heart chambers without hypertrophy; some atrophy of the heart muscle but no fibrosis; slight thickening of the mitral valve; there was no consolidation of the lungs but a terminal œdema was present, as well as marked hydrothorax; the liver was passively congested and showed fatty infiltration and some degeneration; the kidneys showed a chronic interstitial change but no contraction; the spleen was dry and firm and contained comparatively little pulp; the intestinal tract was greatly reddened throughout, particularly the small bowel, which contained a few submucous hæmorrhages; the pelvic lymphatic glands, as well as a chain along the abdominal aorta, were enlarged and reddened; the *pancreas* weighed only 70 grams and was small, firm and pale, and microscopically showed fibrosis; the *thyroid* was twice the normal size, the right lobe measuring 10 x 5 x 4.5 cm., and the left lobe 7.5 x 5 x 3.5. The isthmus was represented by a thin band of tissue. Externally the organ had a bulbous appearance, the right lobe being partially divided into two smaller lobes by a deep notch at one pole. When the right lobe was cut into, it presented a rather unusual appearance, the central portion being occupied by a small irregular calcareous nodule; and in the immediate vicinity of this was a rounded, encapsulated portion which occupied over one-third of the entire lobe and had undergone a fibro-hyaline degeneration. This fibro-hyaline tissue was seen in thin strands throughout

the entire organ and enclosed rounded adeno-colloid portions of thyroid. One can hardly escape the conviction that the fibro-hyaline centre represented the original thyroid tissue, whilst the adeno-colloid collections at either pole represented more recent additions. The left lobe had not the same fibrous appearance but appeared to be much more normal. Microscopically there was great replacement of thyroid by fibro-hyaline tissue with here and there areas of free blood cells. The normal thyroid tissue consisted of acini of varying sizes whose lining cells were not flattened and whose nuclei were pale. Stainable colloid not abundant was present, it had embedded in it some *débris* and a few epithelial cells. The *adrenals* were both quite large, the left being the larger, and measured 7 x 1.5 cm. The cortex was moderately pale and a little thinner than normal. There was a remarkably large amount of dark coloured medulla which formed the main mass of the organ. The right adrenal showed the same characteristics. The microscopic sections showed a thickened capsule; an hypertrophy of the cortical layers; and well marked chromaphil cells in the medullary portion. The ovaries were atrophied and fibrosed; and the uterus had a number of fibroids, some being situated just beneath the mucosa, whilst others occurred in the muscular coats; a few had undergone calcareous degeneration.

Comments: This case is not presented in the expectation of throwing much light on the problem of ductless gland disorders, but it is offered as an example of unusual clinical manifestations which were considered at autopsy as due to pathological changes, principally in the thyroid and adrenals. Had all the usual symptoms which are commonly associated with the condition called hyperthyroidism been present, the case would not have been as noticeable as when only some of these were present. The adrenal hypertrophy is of much interest and leads one to wonder at the enlargement of the medulla of the organ; and to question whether some of the symptoms present in this case were not modified or caused by this abnormality. A plausible but unverifiable interpretation of the events is that some time after the menopause, when the ovarian secretion became diminished or changed, the relationship between the ovary and the thyroid asserted itself, and the latter organ acquired a hypersecretion and hypertrophied. This is only one of quite a few theoretical explanations which might be offered, all of which are based on the clinical observations of thyroid relationship with the ovary. As to why this should have occurred in this instance and not in the case of every woman who passes the

menopause it is impossible to state. There is the possibility that some reflex supplied by the fibro-calcareous changes in the uterus, may have induced this unusual occurrence. The problem is all the more perplexing if one remembers the hyperplastic condition of the medullary portion of the adrenal, present in this case, as well as the atrophic condition of the pancreas.

Clinically considered, this patient had all the usual symptoms associated with exophthalmic goitre, except the exophthalmos. The increased pulse rate, irregularity of the heart action, the nervousness and the tremor are all characteristic of Graves' disease and the condition existed for some years, long enough to bring about the dilatation of the heart chambers, and all the secondary changes consequent upon a poorly working organ. Whilst at autopsy extensive areas were found in the thyroid indicating an atrophic state, following upon former activity, yet sufficient tissue was present highly suggestive of the changes noted in sections of the exophthalmic thyroid.

It is difficult, however, to assign to the enlarged adrenals their share in the production of symptoms; for the simple reason that little as we know about the thyroid, we know still less about the adrenals. It is true we know something about the medullary portion of the adrenal; the well-known suprarenal extract, or to give it its commercial name, adrenalin, being formed from the chromophil cells of the medulla. The action of this secretion on the blood pressure particularly on the splanchnic area, and its styptic action when locally applied, are well recognized; but about the cortex of the organ practically nothing is known. In disorders of the ductless glands the adrenals are frequently affected. Their undue enlargement has been noted in cases of acromegaly and exophthalmic goitre, and their relation to the sexual glands is well known but not well understood. Thus in cases where precocious development of the generative organs was a marked feature, great enlargement of the adrenals was present. It is probable that in the case above outlined, the secretion from the enlarged adrenals increased the blood pressure and possibly affected the circulatory system in ways that we know not of. The marked artero-sclerosis was possibly due to an increased adrenal secretion, affecting the blood pressure.

To some readers it may seem that this report is incomplete unless an attempt is made to trace every sign and symptom to its source in the abnormal post-mortem findings. This is obviously impossible by reason of the fact that we do not know enough about

the secretions of organs like the thyroid adrenal and ovary to trace their effects upon other organs; therapeutically extracts of these organs are employed in a somewhat empirical way. From the experience which the profession has gained in observing and recording cases somewhat akin to ours we have attempted to sketch the general effects on the body from abnormal secretions of the thyroid and adrenals; but as already intimated, the case is recorded, not with the object of noting the numerous theories respecting the functions of these structures, but rather as an example of their undoubted pathological change, accompanied by a brief account of what occurred during life from this change. Possibly the case may serve as a fair example of a class of patients who, whilst they do not present all the well-known signs associated with the condition called Graves' disease, yet seek the physician's advice for the relief of symptoms which are not easy to relieve and are difficult to properly assign.

THE following candidates have passed the final examinations of the College of Physicians and Surgeons of Ontario:—William MacDonald Adams, Toronto; Harold Bell, Collingwood; Wilfred Andrew Thomas Bodkin, London; William Alfred Costain, Brantford; Lawrence Edmond Crowley, Kingston; Arthur Des Rosiers, Rockland; Charles Francis Dunfield, Petrolea; William David Ferguson, Hamilton; Anthony James Flood, Delta; Grattan Clifford Graham, Fenelon Falls; Richard Alfred Ireland, Trenton; David Campbell Irwin, Ottawa; Warren Frederick Lockett, Kingston; Herbert Kent Manning, Toronto; George Robert Miller, Owen Sound; Finlay Munroe, Maxville; Archibald McCausland, St. Thomas; Claude Andrew McClenahan, Milton; Wyatt Lorne McIlwraith, Woodstock; James Franklin McLay, Woodstock; Charles Ernest McLean, Athens; Edmund Morell Alexander Oldham, Chatsworth; William Albert Scott, Langham, Sask.; Charles Edward A. Trow, Toronto; Donald Alexander Warren, Hamilton; Fred Earlby Webb, Aurora; Arnold Lorne Wellman, Harold; Louis Edwin Williams, St. Thomas.

Editorial

THE COLLEGE OF SURGEONS

TWO years ago a bulletin was published quietly by the Carnegie Foundation. It was nothing more than a report of observations which an official had made of medical education in various countries. The work was done hastily and, in many cases, carelessly; but in the main the judgements of medical schools were accepted as correct. The report had the effect of a decree. In the United States thirty-nine medical schools have closed their doors, and many others which incurred censure undertook improvements. In Canada the effect was instantaneous. Two schools were reorganized; one was greatly improved; and all have profited by the frank criticisms which they received.

The practice of surgery in America is now up for fresh consideration. It is declared to be unsatisfactory, and a remedy has been devised. The remedy is a college of surgeons, to which none shall be admitted except those who are competent. The method is simple. Its efficacy will depend upon the wisdom with which it is applied. So long as the college is hortatory it will succeed. So soon as it attempts to become mandatory it will fail. Its value will depend upon the character of the surgeons who compose it. It will depend also upon the character of the surgeons who do not compose it. At the moment it is more important to the college that it should include all good surgeons than it is to the good surgeon that he should be included. Therefore, no good surgeon need fear that he will not be invited to join. The undertaking is an elaborate one, and it requires good sense and good feeling on the part of the organizers as well as sympathy and patience on the part of the profession at large.

If both parties continue to be guided by the profound principle of medical ethics, that the profession exists for the public good, the college will become a reality. If a considerable part of the profession approach the problem in the spirit of Demetrius, who feared that his craft was in danger, the college must fail, since much grave suspicion, profound prejudice, and even weighty reason can be adduced against it by those who are resolute to find fault.

The organizers have proceeded with delicacy and tact; although in the desire to please there is danger of becoming disingenuous and employing devices which defeat their purpose by their transparency. The very name presented a difficulty. In the "authentic statement" which was sent out on May 15th, the name of the corporation was given as the "College of Surgeons." In the "short statement" of October 1st, the title has grown by imperceptible stages to the "American College of Surgeons." The earlier term, by a remarkable stroke of delicacy, was probably intended to meet the susceptibilities of Canadians, who might be disposed to resent the implication that they lived on the American continent. The charge was inevitable, as there are other colleges in the world whose existence cannot be overlooked. Again, in the statement of October 23rd, much is made of the "absolutely democratic origin" of the college; and we are instructed that the mark of a democratic body is that it is "open," and not "selective." The committee protests too much. If the college is not a selected body, it has no reason for existence.

The truth is that the selection was carefully made. The committee selected three persons in various localities to select those who might be invited to become founders of the college. By a further process of selection, a list of Fellows was finally evolved and published on November 13th. If this were the end, the assumption of the new college that its members alone were qualified to perform surgical operations, would be monstrous. But it is not the end, and new names are being brought forward daily. The design is correct; but patience on the

part of the profession and wisdom on the part of the college are required.

Let us consider the Canadian list. From Alberta there are only three names. From Manitoba there is only one outside of Winnipeg. In the whole of Ontario, outside of Toronto, there are only three. From the province of Quebec, outside of Montreal, there is not a single one, and not a French surgeon from the whole province. Nova Scotia supplies only one, and Prince Edward Island none at all. The first business of the college is to establish itself; the next is to make sure that its foundations are sufficiently wide. If it proceeds towards those ends which were recited in the "call of the meeting" before it has remedied the deficiencies in its membership, it will meet with the hostility of the whole profession apart from those members who have elected themselves Fellows.

It is a little too early for this new college to talk of "formulating the minimum standard of requirements which should be possessed by any authorized graduate in medicine," before he shall be allowed to continue to practise that profession which he is already authorized by law to practise. If it "seeks the means of legalizing a distinct degree supplementing the medical degree," before a graduate in medicine shall be authorized to practise surgery, the universities will have something to say, especially those which, like McGill, already confer a degree in surgery.

There is much inefficient surgery in the country districts, but it is the best that can be done under the circumstances, and it is better than none at all. If a physician in the country is to be formally debarred from meeting every emergency which arises, many a sufferer will go unrelieved. It is not by creating a new college that a distinction will be made "between the men who have been authorized to practise surgery, and those who have not." That distinction has already been drawn by the various laws which govern the practise of medicine. It remains for the universities and the licensing bodies to see to it that all practitioners are fully qualified.

The most the American College of Surgeons can do for the present is to keep a roster and be especially guarded in its expression of opinion upon the capacity of physicians whose names do not happen to be upon it.

By its existence alone the college will do much to educate the people to distinguish between competent and incompetent surgical specialists. In the slow progress of time it may, if it is wisely governed, gain the authority of custom and consent. It marks that natural separation between medicine and surgery, which always comes at a certain point in the civilization of a community; but a man does not automatically become a surgeon by ceasing to practise medicine.

MEDICAL INSPECTION OF SCHOOLS

THE second annual report on the medical inspection of public schools in the province of British Columbia contains the results of an inspection continued throughout the school year, from September 1st, 1912, to June 30th, 1913. Provision was made by an Order in Council, dated September 18th, 1912, by which medical inspectors in the unorganized districts were to be paid by the provincial board of health at the rate of fifty cents for each pupil examined, and travelling expenses to the school at the rate of fifty cents per mile. A regular annual inspection was to be made and paid for at the same rate. This allowance has not been considered sufficient by some of the inspectors and one doctor at least has refused to act, the contention being that the distance to *and from* the school should be paid for at the same rate. Appointments are made for the year only, so that it is necessary each year to re-appoint all the inspectors. This, it is thought, will secure more efficient work. A guide for the use of teachers and medical inspectors of rural and assisted schools has been compiled and a pamphlet containing instructions regarding the care of the teeth has been given to each child. School nurses have been appointed to assist the medical inspectors

in New Westminster, South Vancouver, Vancouver, and Victoria, and the appointment of a nurse to assist in the inspection of rural schools is under consideration.

The number of children examined was 37,591. Of these 16,744 had never been vaccinated; 835 were suffering from malnutrition; 1,509 had adenoids; 5,302 had enlarged tonsils; 1,676 were found to have defective sight, and 580 had defective hearing. One hundred and eight cases of scabies were discovered, 86 of ringworm, 114 of impetigo, and in 316 cases vermin were present. It is encouraging to note that the parents, almost without exception, give every assistance and that any objection to the medical examination, which at first may have been apparent, seems to have been overcome. The report contains a plea for the establishment of more open-air classes and refers to the fact that it has been stated that twenty per cent. of school children, upon careful examination, reveal some sign of tuberculosis.

INTESTINAL STASIS

ON his return from Chicago where he was a conspicuous figure in the surgical congress held in that city, Sir Arbuthnot Lane visited Toronto, spent a couple of days at Government House, and came to Montreal. In Montreal he gave two clinics, one in the Royal Victoria Hospital and the other in the Montreal General Hospital. The subject in each instance was intestinal stasis.

Whatever opinions one may hold regarding the delayed passage of intestinal contents, one must admit that the question is most ably put forward by Sir Arbuthnot Lane. As a speaker he is most clear and interesting, and an unusually able advocate of his subject. His views are well defined, clear-cut, and by most people would be considered somewhat extreme, but Sir Arbuthnot has the faculty of making the most radical statements in such a mild voice and in such a gentlemanly way that they lose any sting that might appear if put forward in a

less agreeable manner. By his persistent advocacy and reiteration of his views on every available occasion, in season and out of season, Sir Arbuthnot Lane has certainly got the medical profession on two continents thinking, and thinking hard, regarding auto-infection from the intestinal canal.

Many think that he has grappled with a large physiological problem, that he is dealing with a condition of things in part brought about by modern methods of living and changed conditions of diet. There is at the present time a larger consumption of meat than formerly, and the modern process of milling gives us flour from which all the irritating particles of the husk have been eliminated and which can be but little if at all stimulating to the mucous lining of the gastrointestinal tract. Then again, our upright position and strenuous life tells on the weaker individuals of the community and causes a relaxation of the muscles, and particularly of the abdominal muscles, which play such an important part in holding the abdominal viscera in position. Ptosis is common, and it may be that we shall find surgical methods applicable to a certain number of these cases.

Sir Arbuthnot Lane has had results in a wide range of cases which are most suggestive and, one might even say, startling. This much may be said with some assurance, that the attention of the medical and surgical world is now so keenly directed to this subject that in the comparatively near future it will be worked out and suitable surgical procedures adapted to certain pathological conditions.

OTTAWA AND TYPHOID

THE capital of the Dominion has acquired unenviable notoriety as a result of a serious outbreak of typhoid fever. More unfortunate is it when we are aware that typhoid is a preventable disease and there is no reason why the outbreaks in question should not have been avoided. Eternal vigilance is the price of safety. In no instance is this more

apparent than in the case of Ottawa. Ottawa is beautifully situated on a great river which, from its immense size and the exceedingly large flow of water, was known to the pioneers as the "Grand River." As the city became more populous, an endeavour was made to secure a modern supply of water under pressure for domestic uses and fire protection, and the simplest method was to install water wheels and pumps and force this very soft water to all parts of the city. At the outset the water was taken through a wooden pipe laid beneath the waters of the aqueduct which supplied the water power for the working of the pumps. In the course of time this clear water pipe became pervious, and eventually the openings were so large that, in addition to the water along its course, sewage pouring into the aqueduct also gained access. The usual outbreak of typhoid occurred, explosive in its character, as may be expected when sewage is introduced into the drinking water of a susceptible people. This was in 1887. Immediately steps were taken to improve the system, with the result that a steel intake pipe was laid, extending beneath the waters of the aqueduct and river for upwards of a mile. Everything was satisfactory until the growth of the city demanded a new intake pipe to supply the people and a new aqueduct to supply the additional water wheels required to pump the water. During the course of this new work sewers were intercepted. To care for the sewers cut in this process the easiest method was followed, namely, pumping the effluents from the sewers cut in the new aqueduct into the old aqueduct, which carried at its bottom the clear water pipe supplying the city with water. The waterworks system being worked to its maximum capacity did not furnish sufficient water in emergencies such as those occasioned by fires, and a valve in the aqueduct near the pumping-house was opened to supply the deficiency. The sewage-laden water thus gained access to the city mains. Again there was an outbreak of alarming proportions, the people were tardily warned to boil the water and the modern hypochloride method was used to neutralize the sewage. The outbreak

subsided, the people were very chary of the water and the marble slabs in the silent graveyard tell their tale.

In the meantime the new aqueduct and intake pipe were completed, some portions of the new clear water pipe were constructed of cement during a severe winter season with insufficient protection, resulting in defective workmanship, and eighteen months later, or in the spring of 1912, the new aqueduct and new intake pipe were ready to supply water to the city mains. It seems that the previous warnings had fallen on deaf ears, for there was another outbreak resulting from a mixture of water and sewage which the hypochloride could not neutralize, and the supplying of this as a beverage to thousands of human beings.

An investigation was conducted under the Honourable Mr. Justice Gunn, the result being that it was conclusively proved that the last outbreak was due to the leaks in a cement portion of the intake pipe lying within the aqueduct. It developed at the investigation that a sewer intercepted in the construction of the new aqueduct was carried along immediately over the intake pipe for a considerable distance, and, moreover, was leaking; that the top of the cement portion of the intake pipe developed a crack on its upper surface; and that with the pumps working there was a suction causing water to flow from the aqueduct into the intake pipe. The outcome of the investigation was that the services of the city engineer and the Medical Health officer were dispensed with.

The city of Hull situated on the opposite shore of the river has a system of water supply with its intake pipe in the river, yet there has been no visitation of water-borne epidemics, excepting one which was the direct result of a defective concrete intake pipe. Since the pipe has been made impervious no further trouble has been experienced. This does not prove that the river water is absolutely without danger at all times and that it will continue to be so for all time to come. It does indicate, however, that the water of the river was not responsible for the outbreaks from which Ottawa and Hull

suffered, but that they were due in every instance to negligence on the part of those charged with the proper safeguarding of the water supply.

TYPHOID FEVER AT HALIFAX

HALIFAX has been comparatively free from typhoid fever for several years, an exemption attributed to a plentiful supply of good drinking water but little exposed to risks of pollution. The present epidemic aroused considerable interest in professional circles and led to the appointment of a committee by the Halifax Medical Society to investigate its possible causes. The committee submitted a preliminary report at a regular meeting held on December 10th, from which we glean the following data:

A few cases were observed in August and September; eighty cases were notified in October, fifty in November. The incidence of the disease lessened greatly in November, and in December thus far only five new cases have occurred. The disease has been of average severity. There have been sixteen deaths, a mortality rate of 12.3 per cent. A number of the cases were admitted to the Victoria General Hospital, but in October, as no more patients could be received there, it became necessary to open an emergency hospital with accommodation for fifty beds.

Before discussing the causation of the outbreak, it is necessary to refer to some features of the water supply and the geographical distribution of the cases. The water supply of Halifax is obtained by gravitation from a group of lakes some distance from the city. The water is excellent in quality and abundant in quantity. The watersheds are small, and largely free from risks of pollution by human sources. The water of the lakes is distributed by two mains, one supplying the low-lying sections of the city, the other the higher areas. These are known locally as the "low" and "high" services. The high service supply is free from risks of pollution, but the

low service supply is menaced at several points, actual and potential. The sources of danger have been recognized by the authorities for many years but, strange to say, nothing has been done to improve the situation. It was hoped that the excellent report prepared by Professor Starky two years ago on the water system would have stimulated improvements, but nothing was done. In respect to geographical distribution of cases, the disease was confined chiefly to the northern section of the city, only 15 per cent. occurring in the south end, supplied by water from the same sources.

The discussion which followed the submission of the report disclosed differences of opinion in regard to the cause of the epidemic. All agreed that milk and other food supplies were not responsible. Some thought that the outbreak was due to "fly and contact infections," basing their views on the peculiar limitation of the disease. Others thought from the explosive feature of the outbreak that further investigation and more careful study would show that water infection played a decided part. We await with interest the further results of investigation.

MANITOBA MEDICAL COLLEGE

SOME mention has been made already in this JOURNAL of the work of the medical schools, but so far nothing has been said about the Manitoba College at Winnipeg. Yet, although the last to be mentioned it is by no means least of Canada's medical centres, for it is now holding its thirty-first session with sixty-one freshmen and a total enrolment of one hundred and ninety-one students. These figures indicate the vigour of its growth, and they are the largest yet registered. The college has been extended recently and its original capacity doubled. The new building provides laboratories for practical pathology and practical bacteriology, an enlarged pathological museum, a pathological workroom, and two extra lecture rooms; the dissecting room has also been enlarged.

The faculty has been increased by the addition of the following members, Dr. O. S. Waugh and Dr. George Stephens have been appointed demonstrators in pathology, Dr. F. C. Bell demonstrator in bacteriology, and Dr. D. E. McKenty demonstrator in histology. Dr. Evatt, who was professor of anatomy at the Manitoba College, has received the appointment formerly held in Dublin by Dr. Geddes, professor of anatomy at McGill University, and arrangements have been made with Dr. Alexander Gibson, former demonstrator of anatomy in the University of Edinburgh, to take charge of the anatomical department.

IN an editorial on the Medical Schools, which appeared in the November issue of the *Journal*, it was stated that Dr. John Stewart had been appointed professor of surgery at Dalhousie University in succession to Dr. N. E. Mackay. This was not quite correct. The new professor of surgery is Dr. E. V. Hogan. Dr. Stewart, however, is giving a few lectures this winter in order to relieve the pressure which is necessarily involved in the readjustment of the new and happy relations between the university and the hospital.

IN Bulletin No. 267 of the Laboratory of the Inland Revenue Department at Ottawa, information is found concerning the examination of 167 samples of seidlitz powders. Of these 82 were found to conform to requirements. However, an unexpected degree of carelessness was evident in their manufacture, for 73 of the samples examined were found to be adulterated and 12 samples showed great carelessness in weighing. The term "adulterated" was employed when the contents of either the blue or the white package deviated by more than 10 grains, either more or less, from the amount specified in the pharmacopœia—for the blue paper 120 grains of sodium potassium tartrate and 40 grains of sodium bicarbonate; for the white paper, 38 grains of tartaric acid.

At first sight perhaps plumbing and medicine seem to have little in common, but substitute the words "public health" for "medicine" and a connexion is at once established. On a recent occasion, speaking at the Royal Technical College, Glasgow, Mr. W. D. Caroe, Master of the Worshipful Company of Plumbers, made the suggestion that more efficient work might be done if all plumbers were registered, particularly if each man were to mark his work with his registered number. Or, he suggested, each registered plumber might wear a badge as a proof of his efficiency. As the *Lancet* observes, the suggestion has practical force.

A CHARGE of malpractice was made recently against Dr. B. R. Mooney, of Macleod, Alberta. The plaintiff alleged negligence and want of skill in performing an operation for appendicitis; he stated that, although he was on the operating table for four hours, defendant failed to find or to remove the appendix. He alleged also that muscles were cut out during the operation. Special damages amounting to \$919.50 and general damages of \$5,000 for suffering and permanent injury to health were claimed. The defence was a complete denial of the allegations, and it was stated that the inability to discover the appendix was due to the large number of adhesions which were encountered. A counter claim for \$300 for medical attendance was made. Judgment was given for plaintiff for \$780 special damages, no general damages being allowed. The defendant was awarded \$135 on his counter claim. We are informed that Dr. Mooney is appealing against the decision.

A ROYAL COMMISSION, with Lord Sydenham as chairman, has been appointed to enquire into the prevalence of venereal diseases in the United Kingdom, their effects upon the health of the community, and the means by which those effects can be alleviated or prevented, it being understood that no

return to the policy or provisions of the Contagious Diseases Acts of 1864, 1866, or 1869, is to be regarded as falling within the scope of the enquiry." The members of the commission are: Right Hon. Sir David Brynmor Jones, K.C., M.P., Sir Kenelm E. Digby, Sir Almeric Fitzroy, Sir Malcolm Morris, Sir John Collie, Mr. James Ernest Lane, Dr. Arthur News-holme, Canon J. W. Horsley, Rev. J. Scott Lidgett, Dr. F. W. Mott, Mr. Philip Snowden, Mrs. Scharlieb, M.D., Mrs. Creighton, and Mrs. Burgwin.

A PENSION on the Civil Service list of £50 has been granted by Premier Asquith to the widow of the late Nathaniel Alcock, professor of physiology at McGill University. At Dr. Alcock's death, his family was left quite unprovided for, and a memorial fund was established to provide the means to educate his four children, of whom the eldest is but seven years of age. Already Dr. Alcock's friends in England have subscribed over ten thousand dollars for this purpose; and following is a list of the Canadian contributors:

Dr. A. W. Malloch (Hamilton, Ontario), \$50; Dr. J. G. Adami, \$50; Dr. George E. Armstrong, \$50; Dr. F. J. Shepherd, \$25; Prof. Willey, \$25; Dr. A. T. Bazin, \$25; Dr. Birkett, \$25; Dr. Blackader, \$20; Dr. Macphail, \$10; Dr. W. Peterson, \$10; Dr. W. F. Hamilton, \$10; Dr. J. McCrae, \$10; Dr. R. H. M. Hardisty, \$10; Dr. J. Alexander Hutchison, \$10; Dr. E. Archibald, \$10; Dr. F. R. Miller, \$10; Dr. Maude E. Abbott, \$5; Dr. MacCordick, \$5; total, \$360.

THE eleventh International Conference on Tuberculosis opened in Berlin on October 22nd. In the absence of M. Bourgeois, of Paris, the president of the International Anti-tuberculosis Association, the chair was taken by Dr. Bumm, chief of the Imperial Bureau of Public Health, Berlin. The inaugural address was delivered by Dr. Delbrück, secretary of state. In it he spoke of the progress which has been made during the past fifteen years towards diminishing the death

rate from tuberculosis—the mortality has decreased by one-third in England, France, Germany, Belgium, and the United States, and one-fifth in Austria, Switzerland, and the Netherlands. The three principal discussions of the conference were on the pathogenesis of tuberculosis, the surgical treatment of pulmonary tuberculosis, and national insurance and tuberculosis. Dr. Shennan, of Edinburgh, contributed a paper to the discussion on tuberculosis and man; he stated that in Scotland the death rate for the disease was highest between the ages of twenty-five and thirty-five, whereas in England the period of greatest mortality was from thirty-five to forty-five. Dr. Hamel, of Berlin, stated that in Germany one-fourteenth of the adult mortality from this disease was due to tuberculosis of organs other than the lungs, and of the deaths under fifteen years of age this was true of one-half of these resulting from tuberculosis. In England, Scotland, Sweden, and Norway, this percentage rises to four-fifths. Professor Petruschky, of Danzig, compared the typical course of chronic tuberculosis with that of syphilis and referred to the fact that glandular disease frequently precedes active tuberculosis. Dr. Mack, of Hamburg, announced the departure of an expedition for Jerusalem to study tuberculosis in the Arab and in the European. It is hoped that valuable information will result.

An excellent paper on the surgical treatment of pulmonary tuberculosis was given by Dr. Brauer, of Hamburg. He briefly discussed resection of portions of the lung and the surgical opening of large tuberculous cavities, and then turned to the treatment of pulmonary tuberculosis by artificially induced collapse of the lung. He recommended the extensive extrapleural operation. The “pillar resection” he did not advise, save in exceptional cases, as it is often followed by an aspiration pneumonia of the lower lobe.

In the third discussion, much interesting information was given by Dr. Kaufmann and others concerning the measures taken to prevent the disease.

Book Reviews

DISEASES OF THE STOMACH, INCLUDING DIETETIC AND MEDICINAL TREATMENT. BY GEORGE ROE LOCKWOOD, M.D. Illustrated. Philadelphia and New York: Lea & Febiger, 1913.

A fresh book by a new author upon diseases of the stomach is always welcome. Dr. Lockwood is professor of clinical medicine in Columbia University, and attending physician to Bellevue Hospital, and he has described these diseases "as he happened to see them," from the standpoint of personal experience. Series of cases have been grouped and analyzed, and the results noted. When these results are at variance with the accepted teaching, the fact is noted, and in many cases they are strange and unexpected. The book, then, reflects a careful study of disease from hospital and private case records and from authentic histories from other hands. All will agree that it is a very complete presentation of diseases of the stomach, useful to the general physician and interesting to the specialist who is always glad to find fresh views, especially if they are based, as they are in the present case, upon a large practice and wide observation. One turns instantly to the section which deals with radiography, and finds that Dr. Lockwood has taken full notice of "the radical differences of opinion between some of the leading radiologists as to the limitations, or lack of limitations, of their special art." He is not carried away by any apparent advantage which a machine enjoys over human intelligence in making a diagnosis of the obscure conditions which are found in the diseased stomach. There is small danger that a book of the importance of this one will be overlooked, especially at a time when the subject with which it deals is under scrutiny by the profession.

HYGIENE AND PUBLIC HEALTH. BY LOUIS C. PARKES, M.D., D.P.H., and HENRY R. KENWOOD, M.B., F.R.S. (Edin.), D.P.H. (Lond.). Fifth edition; illustrated. Price, 12s. 6d. net. London: H. K. Lewis, 1913.

Parkes and Kenwood still remain the exponents of the best practice in hygiene and public health. An examination of the five editions of their book would disclose the record of the progress

which has been made in this division of science in the past fifteen years. The present edition bears the date of September 13th, 1913, and contains well considered opinions upon all matters pertaining to hygiene and public health. The book is an established standard for students, and all official persons who have to do with these subjects.

DORLAND'S AMERICAN ILLUSTRATED MEDICAL DICTIONARY, with new and elaborate tables. Seventh revised edition. Edited by W. A. NEWMAN DORLAND, M.D. Large octavo of 1107 pages, with 331 illustrations, 119 in colours. Containing over 5,000 more terms than the previous edition. Philadelphia and London: W. B. Saunders Company, 1913. Flexible leather, \$4.50 net; thumb indexed, \$5.00 net. Canadian agents: J. B. Hartz Company, Limited, Toronto.

The present writer has used this dictionary, in its various editions, for the past thirteen years, and has always found that it met every reasonable demand which was made upon it. The test of a book is experience; and seven editions in thirteen years is proof that the experience of the present writer is not singular.

THE SURGERY OF THE STOMACH. A HANDBOOK OF DIAGNOSIS AND TREATMENT. BY H. J. PATERSON, M.A., M.C., M.B. (Cantab.), F.R.C.S. (Lond.). Illustrated with plates. Price, \$3.50 net. Toronto: The Macmillan Company of Canada, Limited, 1913.

This book has arisen out of an essay by the author, which won the Jacksonian prize awarded in 1904 by the Royal College of Surgeons. It gives an extended account of the diagnosis and treatment of those affections of the stomach which are amenable to direct surgical interference. One reads with some surprise that in England for diagnosis of diseases of the stomach, "chemical methods are so rarely made use of in practice and dealt with so briefly in textbooks." In this country such methods are a matter of routine. Full stress is laid upon the prevalence of gastric cancer and the necessity of an early diagnosis. In less than five per cent. of the cases which are referred to the author for surgical treatment is a radical operation possible. His experience is not singular, and all operators will agree that "the saddest and most discouraging part of the work of a surgeon is the frequency with which he sees patients suffering from cancer so advanced that the time for a radical operation has

gone forever." It might be expected that an author who was so much concerned about early diagnosis should have made some mention of radiography in connexion with the bismuth test-meal. The list of references appear to have been compiled by the female assistants to whom the author gives such unstinted praise. The list is quite formal, imperfect, and indiscriminating.

Books Received

THE following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

THE PRACTICAL MEDICINE SERIES, comprising ten volumes on the year's progress in Medicine and Surgery. Under the general editorial charge of GUSTAVUS P. HEAD, M.D., and CHARLES L. MIX, A.M., M.D. Vol. I, GENERAL MEDICINE, edited by F. BILLINGS, M.D., and J. H. SALISBURY, M.D. Vol. II, GENERAL SURGERY, edited by J. B. MURPHY, M.D., LL.D. Vol. III, THE EYE, EAR, NOSE AND THROAT, edited by CASEY A. WOOD, M.D., D.C.L., ALBERT H. ANDREWS, M.D., and GUSTAVUS P. HEAD, M.D. Vol. IV, GYNECOLOGY, edited by E. C. DUDLEY, M.D., and H. M. STOWE, M.D. Vol. V, PEDIATRICS, edited by ISAAC A. ABT, M.D.; ORTHOPEDIC SURGERY, edited by JOHN RIDLON, M.D., with the collaboration of C. A. PARKER, M.D. Vol. VI, GENERAL MEDICINE, edited by F. BILLINGS, M.S., M.D., and J. H. SALISBURY, A.M., M.D. Vol. VII, OBSTETRICS, edited by J. B. DE LEE, M.D., with the collaboration of H. M. STOWE, M.D. Price of the series of ten volumes, \$10.00 Single volume, Vol. I, \$1.50; Vol. II, \$2.00; Vol. III, \$1.50; Vol. IV, \$1.35; Vol. V, \$1.35; Vol. VI, \$1.50; Vol. VII, \$1.35. Chicago: The Year Book Publishers, 1913.

THE PRACTITIONER'S VISITING LIST FOR 1914. Price, postpaid, \$1.25. Thumb-letter index, 25 cents extra. Philadelphia and New York: Lea & Febiger.

- ACUTE ABDOMINAL DISEASES INCLUDING ABDOMINAL INJURIES AND THE COMPLICATIONS OF EXTERNAL HERNIA. By J. E. ADAMS M.B., M.S. Lond., F.R.C.S., Eng., and M. A. CASSIDY, M.A., M.D., B.C. Cantab., F.R.C.P. Lond. Toronto: The J. F. Hartz Company, Limited, 1913.
- DISEASES AND DEFORMITIES OF THE FOOT. By JOHN JOSEPH NUTT, B.L., M.D. Illustrated. Price, \$2.75. New York: E. B. Treat & Company, 1913.
- THE PRESCRIBER, November, 1913. Special number dealing solely with tuberculin therapy. May be obtained from Mr. Paul B. Hoeber, 69 East Fifty-ninth Street, New York.
- A SYNOPSIS OF MIDWIFERY. By ALECK W. BOURNE, B.A., M.B., B.C. (Cantab.), F.R.C.S. (Eng.) Bristol: John Wright & Sons, Limited, 1913.
- MEDICAL AND SANITARY INSPECTION OF SCHOOLS FOR THE HEALTH OFFICER, THE PHYSICIAN, THE NURSE, AND THE TEACHER. By S. W. NEWMAYER, A.B., M.D. Illustrated. Price, cloth, \$2.50 net. Philadelphia and New York: Lea & Febiger, 1913.
- MENINGOCOCCUS MENINGITIS. By HENRY HEIMAN, M.D., and SAMUEL FELDSTEIN, M.D., with an introduction by HENRY KOPLIK, M.D. Illustrated. Philadelphia, London and Montreal: J. B. Lippincott Company, 1913.
- INTERNATIONAL CLINICS, Vol. IV, Twenty-third Series, 1913. Edited by H. W. CATTELL, A.M., M.D., and others. Philadelphia and London: J. N. Lippincott Company.
- PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE, Vol. VII, No. 1, November, 1913. Price, 7s. 6d. net. London, New York, Calcutta, and Bombay: Longmans, Green & Company.
- CAUSES AND CURES OF CRIME. By THOMAS SPEED MOSBY. Illustrated. Price, \$2.00. St. Louis: The C. V. Mosby Company, 1913.
- PYORRHEA ALVEOLARIS. By FRIEDRICH HECKER, B.Sc., D.D.S., A.M., M.D. Illustrated. Price, \$2.00. St. Louis: The C. V. Mosby Company, 1913.

Res Judicatæ

ACIDOSIS

ACIDOSIS, in our minds, has from time to time been variously associated with diabetes mellitus, where it has been supposed to be the causative factor in coma; with so-called cyclical vomiting and certain other states in children; and with a great variety of other conditions including herein the acute gastro-intestinal disturbances of adults; it was long known to physiologists as an accompaniment of experimental fasting in professional fasters; more recently, attention is being called, largely by surgeons, to its frequency as an operative sequence, presumably to the administration of a general anæsthetic; and Jordan and Harris have described its occurrence in the so-called milk-sickness of some of the middle States of America.

So extensive is the literature, so complicated the study of its various phases, that no attempt is here made to do more than the title implies, namely, give some observations on the subject. Its presentation is due to the stimulation of recent personal experience, and the request of the acting secretary, on the understanding that another member of this association was to review the literature, particularly from its chemical and etiological aspects. In the absence of such a paper it is advisable briefly to mention, that the prevalent idea of authorities, seems to regard acidosis as a state of the blood and tissues showing the presence of an abnormal quantity of acid, probably beta-oxybutyric, and that this state may be at any time merged into one of acid intoxication, by the acid overcoming the basic ions (Sprigg, *Quarterly Journal of Medicine*, Vol. II, 1908-1909).

The neutralizing base is firstly the Na of the body fluids, the K of the cells, and the alkaline earths of the bones. Secondly, the NH_3 from hydrolysis of protein, the bulk of which, in the absence of alkali, would have been converted to urea, and excreted in that form; if the amount of acid introduced is so great that it cannot be either disposed of in this way or by oxidation, then the reaction of the tissue fluid is liable to alteration, and acid intoxication will ensue. There is an excess of acid, long before a reduction of

alkalinity takes place, and a state of acidosis long before acid intoxication. The state of acidosis is ascertained, (1) by the presence in the urine of acetone and diacetic acid, end-products of beta-oxybutyric acid, and occasionally that substance itself; (2) by the excretion of acetone in the saliva, giving the breath a characteristic sweetish odour; (3) by the result of the administration of two drachms of soda bicarbonate, which in the normal individual renders the urine alkaline; (4) by the reduction of the alkalinity of the blood; (5) by the amount of NH_3 in the urine.

The acid intoxication (the overcoming of the system's resources to neutralize the acid) is liable to appear suddenly, when the state of acidosis has been present for a greater or shorter length of time. It is ushered in with abundance of acetone and diacetic acid in the urine, coated tongue, heavy sweetish odour to the breath, absence of abdominal pain, no jaundice, excessive vomiting, constipation, normal or subnormal temperature, chilliness, great throbbing of the heart, swimming of the head or other interference with balance co-ordination, mental activity, and muscular weakness, and perhaps air-hunger, with appearance of arterial-coloured venous blood.

My observations will be confined chiefly to the possible role of gastro-intestinal toxins in its etiology, and the two elements of stasis and bacterial action aiding in the production of the poisons.

In *diabetes mellitus* the coma has been generally considered as due to the acid intoxication. Wolf in the "Reference Handbook of Medical Sciences," says there is little evidence of direct value that diabetic coma is due to the acid products, in spite of the weight of opinion. He claims that the studies of Langl and his co-workers are not conclusive, but lays stress on the fact that the percentage of CO_2 in the blood falls below the normal thirty to forty volumes per cent. before coma ensues. Personal experience shows that the mental state in acid intoxication is one of excitation rather than coma, with a particularly keen memory, active mental processes, and inability to sleep. This was noticeable also in cases of milk-sickness reported by Harris. The coma of diabetes may be due to some other associated product, unless it comes from exhaustion of the nerve cells, though one's observation of patients does not suggest this. Also in the treatment of diabetic coma, the failure of soda bicarbonate to overcome it has been marked, once coma has set in, though many have had good results in staving off a threatened coma by the prompt and effective use of soda bicarbonate.

The occurrence of acidosis in fasting. Cathcart has summed up the work to date on protein metabolism. The old idea that acetone bodies were produced in the system, solely from altered metabolism of fats is not universally held now, and many agree with Naunyn, that it is chiefly produced from an altered breaking down of proteids. All agree that the absence of carbohydrates is a factor, as in the frequent diet of diabetes, or in starvation, and that the presence of fever, exclusive meat diet, occurrence of some shock or strain, may upset the normal metabolism of susceptible tissues. Recent experience of eleven days of entire absence of food, during which time, under treatment, the acetone bodies disappeared, not to return on an exclusively fat diet, tends to confirm this idea. It is well to keep in mind also the fact that in starvation there is necessarily an intestinal stasis, unless purgatives are used. It would be interesting to know if any difference in production of acetone bodies during fasting would result if cholagogues were used while the experiment was in progress.

Acidosis associated with surgical operations. Cates, Knoxville, Tenn., calls attention to the statistics of the Boston City Hospital bearing on this. Out of four hundred operations, forty-six showed signs of acidosis, with a mortality of 13 per cent., where the cause is supposed to be imperfect oxidation of the proteids of the body. J. A. Kelly assumes the presence of a similar condition to that in uræmia and acute yellow atrophy of the liver. Though the symptoms were sometimes those of intracranial pressure, there were never any post-mortem evidences of intracranial pressure, but in all there was fatty liver. Of the forty-six cases in Boston, seventeen showed evidences of acidosis on entrance, twelve developed it twelve to twenty-four hours after the anæsthetic (ten with ether, and two with nitrous oxide), and seventeen developed it later without an anæsthetic. There is no proof that it develops as a result of the anæsthetic. The general anæsthesia may precipitate an attack in a person in a condition to favour imperfect oxidation of albuminous substances. The tissue poison, beta-oxybutyric acid, is a derivative of albuminous decomposition, with acetone and diacetic acid as end-products. There were all grades of severity of symptoms, from an uncomfortable feeling with bodily lassitude in mild cases, to great restlessness and wild delirium in fatal cases.

Gundrum (*Johns Hopkins Bulletin*, June, 1909,), concludes his study of the question thus: (1) Surgical anæsthesia is followed in a certain percentage of cases by acetone and sometimes diacetic acid in the urine. (2) The character and the amount of the anæsthetic

is of no consequence. (3) Emotional individuals are more prone than phlegmatic.

As for prophylaxis in post-operative acidosis, Wallace (*Lancet*, December 5th, 1908), as the result of the study of two hundred and ninety-nine experimental cases, comes to the following conclusion: (1) Before operation, glucose is better than sodium bicarbonate. (2) Secondary vomiting is in direct relation to the amount of acetone produced. (3) The anæsthetic should be given by the open method to avoid deficient oxygenation. (4) After the operation, the stomach should be washed out with a solution of sodium bicarbonate and some of the solution should be left in.

It would be well also to avoid all chilling and prevent, as far as possible, nervous upsetting before and after the operation. Avoid also constipation and intestinal stasis—in this circumstance atropine may possibly be useful to paralyse the sympathetic fibres, thus allowing the autonomic fibres to have free play for peristalsis and intestinal elimination.

Acidosis in gastro-intestinal disturbances of adults. I would like to call attention to some possible preceding favourable conditions, such as any form of digestive disturbance which would favour the production of gastric hyperacidity, for instance, gastric or duodenal ulcer, hyperchlorhydria, and persons, otherwise normal, with a marked hyperacid stomach content. In such persons there is apt to be a predilection for proteid diet, and a minimum of carbohydrates. Also the use of abnormal quantities of acid in and with the food, or an absence of alkali. Then, too, there may be some stasis from constipation, loss of tone, obstruction, adhesions as from pylorus to hepatic flexure causing kinking of the pyloric outlet, pyloric spasm, exposure to cold, fatigue, mental excitement or exhaustion, and shock.

Elimination takes place in the urine; from the *stomach*, causing vomiting or reabsorption, if there is no vomiting; into the *bowel*, through the bile, giving reabsorption from the colon if purging is not carried on; in the *saliva*, giving the characteristic odour to the breath; from the skin, giving the same odour when there is sweating.

Post-mortems in the Boston post-operative cases, corroborated by Guthrie in the various cases of children and adults, and also those of milk-sickness studied by Harris, all showed fatty degeneration of the liver, and in some the heart and muscles showed changes.

The consideration of the so-called milk-sickness, studied by Jordan and Harris (*Journal of Infectious Diseases*, Vol. VI, No. 4,

1901) may be helpful in this condition. This is a disease, traced back to 1776, endemic in certain parts of the middle states, and causing great destruction amongst horses and cattle. From the latter, man is infected through the milk, butter and other products. The cattle show an excited stage, followed by weakness or exhaustion. There is a strong odour of acetone to the breath, fæces, skin, and hide after death, with a tendency to twitching and gasping for breath, the temperature being often subnormal.

In man there is marked constipation, prolonged and violent vomiting, thirst, weakness; sometimes there is a preliminary stage of eight to ten days, before the second stage of acute milk-sickness, and sometimes there is a chronic condition, when the acute form may be brought on by fasting, fatigue or over-exertion, or constipation. They present a typical picture of acid intoxication with acetonuria and acetone breath in every detail of symptoms, which need not be recited. There is a tendency to relapse or recurrence, as in the cyclical vomiting of children. The mortality in man ranges from 10 to 25 per cent.

Certain pastures in low wet localities are known to be milk-sickness producing. This has been well established. One instance might be cited where for nine years, with a certain part of the pasture fenced off, there had been no case. A breach in the fence permitted the cattle to reach the infected area and milk-sickness broke out in cattle and men. Every case was traced through the milk and its products to the infected cattle. There were two instances when infected meat was eaten, those partaking becoming infected, while others of the same family not partaking, remained well. They investigated the disease thoroughly, and isolated a germ, which they named *bacillus lactimorbi*. It is spore-forming and large in size. It was obtained from the spleen and intestinal mucosa, and in pure culture from the bile and liver. They fulfilled all Koch's postulates, by isolating it, growing it in pure culture, reproducing the disease in animals and recovering the same germ from them. The agglutination tests were positive also.

At autopsy there was an odour of acetone from all the tissues, sometimes there were heart changes, and fatty areas in the muscles. The duodenum and jejunum showed deep injection of the vessels—an acute enteritis. The liver was sometimes enlarged, there were always congested areas and fatty degeneration (nutmeg liver). The kidneys showed a mild glomerulitis, and sometimes parenchymatous fatty changes.

This bacillus they find widespread on alfalfa and in cow manure,

apparently identical bacteriologically with *bacillus lactimorbi* but not showing pathogenicity. Jordan and Harris suggest that there may be certain conditions necessary to render the germ pathogenic, and in this connexion there is some suspicion that the presence of a certain variety of golden-rod near alfalfa, other conditions of soil, moisture, etc., being favourable, may produce a pathogenic variety. Not all persons are susceptible, and it may be that certain conditions of the individual may render him susceptible after ingesting the germ. The post mortem on one boy showed constrictions in the intestines every few inches, but no scar tissue at these places, and with the fatty liver condition.

Intestinal obstruction. Many observations, clinical and experimental show that under certain conditions powerful toxins are produced in or by the intestines. In the normal individual it is a very common observation that if constipation is present and no purgative taken, nature frequently comes to the relief with the production of one or more loose stools, accompanied sometimes with cramping pains; and the obstruction is thus overcome, forcing out the hard faeces. It is a common observation also in many forms of obstruction, as in cancer of the bowel, that a desperate toxic condition develops, which is fatal if the obstruction is not overcome. The same is true of strangulated hernia, volvulus, the acute symptoms of enterospasm, kinks from adhesions, etc., the effort being made possibly to overcome obstruction. Perhaps this is attained by the development of some toxic substance, which, if the obstacle be removed thereby, or with surgical or other effective intervention, is neutralized, but if not, serious results may ensue.

It is interesting in this connexion to take note of the work of experimenters in this line. Whipple and Stone of Johns Hopkins, for example, have isolated a piece of bowel, occluded it at both ends under strict aseptic precautions, and the dogs have died in from twelve hours to three days with signs of acute toxæmia. They took the precaution of washing out the piece of gut first, with similar results. They treated it with antiseptics and made cultures before and after experiments, but recovered no germ. In every case there was liver destruction from the toxin. They isolated a toxin from the endothelium, which injected into other dogs caused death similarly. They have been unable to discover the chemistry of the substance, but have succeeded in immunizing dogs with it against its action. After the toxic symptoms subsided, the dogs were immunized, so that late complete obstruction produced no similar toxic effect. By graduated doses they immunized other dogs before

experiment so that no fatal result ensued on tying off a piece of their bowel.

At London, Ontario, recently Gurd, of Montreal, read a paper which unfortunately I just missed owing to the simultaneous meeting of sections; I am awaiting its publication but understand that he produced a toxine in the intestine by ligature of the portal vein.

I think from these and similar observations, and from the fact that in milk-sickness there is always obstinate constipation, that after abdominal operations there is a possibility of some stasis, even ileus; that in all bowel obstructive conditions there seems to be stasis; and certainly in some, possibly in many or all cases of acidosis, there is some form of a greater or lesser condition of stasis; we are therefore justified in future in keeping in mind the possibility of thus producing favourable conditions for the ensuance of the state of acidosis or acid intoxication. Then, too, it would be well not to forget the findings of Jordan and Harris as to the germ, *bacillus lactimorbi*, and that some form of obstruction or stasis, may be a favouring factor for its growth in the small intestine and the production of the altered metabolism resulting in the acid intoxication. It is possible, and there are some suggestions indicating it, that time may show that there is some upsetting of the balance between the autonomic and sympathetic nerve systems.

To summarize: acidosis seems to be a state of the blood and tissues readily leading to acute acid intoxication, with a varied incidence of predisposing causes as to diet, starvation, acid contents of stomach, stress, constipation, or bowel stasis.

It is of great importance to the surgeon to prevent it, and to treat it effectively, when met with.

It may be of great importance to the hygienist and to the province, from the possibility of preventable germ infection. Since the condition of climate and wet pasture in parts of the Fraser Valley are favourable, it would not be amiss to investigate this subject in British Columbia.

It is of importance to the general practitioner, and suggests the added importance of normal bowel action in all patients, and makes one ask the question whether infected milk is a possible factor in the cause of the prevalent tendency to acidosis in children. Sodium bicarbonate and cholagogues, direct and indirect, must not be forgotten in prophylaxis and treatment. A recent experience of a patient receiving intravenous injection of soda bicarbonate was far from pleasurable, though effective, and was followed by a typical

gastric hypersensitization to it in any form or guise. In feeding early and mild cases carbohydrates are important, but in late and severe cases, with damaged liver, fats play an important role, as they are taken up without passing through the liver.

I shall not take more time here than to mention the importance of bismuth and *x*-rays, in the detection of various anomalies of the intestinal tract.

Lastly, attention should be called specially to the autopsy findings of fatty liver in all these cases. The liver seems to bear the brunt of the toxins taken up from the intestine, and when liver inadequacy to convert the ammonia to urea occurs, the gateway is open for the production of acidosis in the system; in other words, the liver is able to detoxicate the toxins absorbed from the intestine, up to a certain point of damage to its own structure.

Vancouver.

J. W. McINTOSH

THE annual meeting of the Royal Edward Institute for the study, prevention and cure of tuberculosis, Montreal, was held November 21st. The president, Colonel J. H. Burland, spoke of the insanitary conditions existant in the city and the necessity for legislation to prevent such conditions. The number of deaths from tuberculosis in Montreal is increasing rather than decreasing in spite of all modern advances in medical knowledge, and the fault seems to lie largely in the lack of proper sanitation. Last year, eight hundred and sixty persons died from tuberculosis, while during the previous year only seven hundred and fifty-six deaths occurred. On the motion of Dr. Kennedy, a resolution was passed that a week should be chosen next February or March, when lectures on tuberculosis should be given and articles published in the daily press which would increase the general knowledge concerning the disease and its prevention. The resignation of Mr. Robert Archer, the treasurer, was received with regret.

Retrospect of Surgery

THE OPERATIVE TREATMENT OF PERSISTENT CONSTIPATION. BY
V. SCHMIEDEN, *Verhandlungen der Deutschen Gesellschaft für
Chirurgie*, March, 1913, II, 96.

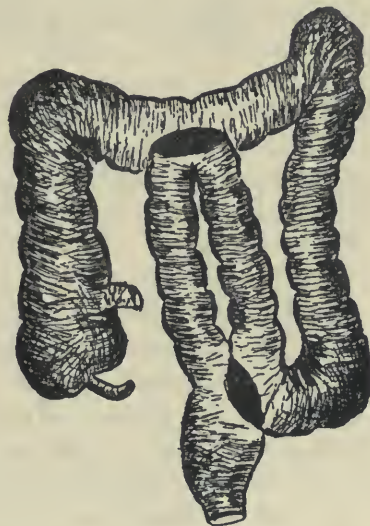
IN cases of constipation in which, through x-ray or other means of examination, the seat of the disease can be definitely located and a pathologic-anatomic cause found for the disorder (tumour, adhesions, kinking, or stenosis), the prognosis is favourable. Operation is the logical form of therapy. In other cases, in which the disturbance is purely functional and extends over the whole or a large part of the intestinal tract, it is more difficult to decide from the information obtained by examination, whether or not surgical interference will be attended with good results.

Professor Schmieden reports a case of atony of the whole colon in an adult thirty-nine years of age, associated with great dilatation (the hypokinetic type of Schwarz) and marked congenital elongation of the mesentery of the large bowel,—the anatomical condition resembling the transitional form of Hirschsprung's disease. Constipation in a mild form had been present in childhood but had gradually become worse, leading eventually to great functional disturbance,—general weakness, incapacity for work, and mental sluggishness. Bowel movements occurred only every eight days; stools passed in hard, dry masses; no blood. The rectal speculum passed thirty-three centimetres without the least resistance and gave the impression that, if the instrument had been longer, it could have been inserted much higher. X-ray examination showed a sigmoid loop reaching high up into the epigastrium. This loop together with a festooned transverse colon added so much to the length of the large bowel that constipation was the result. The bismuth contrast showed, further, almost complete absence of those constrictions in the wall of the colon between the plicæ semilunares which are a mark of bowel competency and are necessary for normal bowel activity.

On these observations a practical operative treatment had to be built, which would effect, without too great risk to the patient, an essential shortening in the colon tract and an acceleration of

function. At the same time the possibility of retention of fæces in the abandoned portion of the route had to be guarded against.

Professor Schmieden lays stress upon the careful preliminary study of the anatomy and function of the bowel in such cases, in order that the primary operation may be complete and efficient, and multiple operations need not subsequently be done.



The accompanying sketch shows the surgical procedure adopted in the case under consideration.

After the fourth day movements of the bowel occurred daily. Later x-ray observations showed that the bismuth ingested passed from the ascending colon to the rectum by the shortest route.

At the convention of the Union of Manitoba Municipalities, on November 27th last, it was resolved that, "in view of the high cost of living and the growing maintenance of the hospitals of Manitoba, it should be suggested that a maximum charge of \$1.50 a day, instead of \$1.00, should be made under the Charities Aid Act for patients, in addition to the government contribution of twenty-five cents for each day of treatment.

German Literature

ABSTRACTS OF GERMAN LITERATURE

DICHOTOMY. *Muenchener Medizinische Wochenschrift.*

“ARE you for or against dichotomy?” This question has been much asked of late among Munich doctors, and I suppose very many who are thus questioned would reply: what then is this dichotomy? A superficial observer might give the following definition: By dichotomy is meant a division of the fee between two doctors, one of whom has, for some reason, given his patient into the care of the other. For example a specialist in medicine gives a patient to a surgeon for operation. The surgeon then presents his colleague with a certain percentage of the fee he received for the operation. At this definition I hear all the doctors crying with one voice: this practice is unworthy of our profession. And this I do not deny, for it is indeed an unethical procedure; but even with this dictum the subject cannot be closed, for much more is involved in this question than first meets the eye. The fee-splitting may be the result of a feeling of gratitude on the part of the surgeon for the assignment of the case; or from an idea that it is the fair thing to do. Nietzsche says: “We call him good who follows where his heart leads, but also him who hears alone the call of duty.” And Spinoza says: “Nothing is good or bad for us that has not something to do with us”. . . . The general practitioner will probably recall many instances where he has made a correct diagnosis, advised operation and saved the patient’s life. By means of his keen intellect and medical skill he has been able to do this; and for this service he may receive the paltry sum of five or ten marks. The surgeon or specialist who is called in undoubtedly helps to save this life, certainly gets all the credit, and receives many times as great a sum as the poor practitioner who probably gets as much as the tip a thankful patient presents to the orderly on leaving the hospital. But we must not belittle the services of the surgeon who, by means of his wider knowledge, can deftly remove the source of trouble diagnosed by the physician. . . . Now suppose the surgeon be a sensitive creature who thinks of others and realizes the value of the physician’s art. He will say: it is unfair that I should receive so

much more remuneration than he. But the surgeon is perhaps also an ethical being. How then is he to repay the physician? And here lies the real problem of dichotomy.

A CASE OF LEAD POISONING.

A peculiar case of lead poisoning is described in number XXI of the *Muenchener Medizinische Wochenschrift*. A healthy child of six months, breast fed, began suddenly to lose weight, the cause of which could not be ascertained. In three weeks the child was in a dangerously emaciated condition. Now suddenly appeared a new symptom, a severe stomatitis of a nature to suggest lead poisoning. Everything in the neighbourhood of the child that might contain lead was examined, even the bed covers, with negative findings. The rubber sheeting that covered the mattress was finally examined and found to contain lead. On removing the sheeting, the child's condition immediately improved and was soon again normal.

TUBERCULOUS MENINGITIS WITH RECOVERY. *Muenchener Medizinische Wochenschrift*, No XXVI.

From the medical clinic of Jena comes the report of two cases to be added to the existing list of eighteen, reported from various parts, of recovery from tuberculous meningitis. The treatment was lumbar puncture for relief of symptoms. The first case is that of a child of eighteen months. The rigidity of the neck, sensory disturbances, Kernig's phenomenon, and clear cerebrospinal fluid, rich in lymphocytes and containing tubercle bacilli, leave no room for doubt as to the diagnosis. Lumbar puncture was performed five times during a period of three weeks, and in all 55 c.cm. of fluid removed. Each puncture was followed by marked relief of symptoms. The cerebrospinal fluid of the third puncture, performed on the fourth day after admission, contained no tubercle bacilli, and examination of the two subsequent specimens was also negative.

The second case was that of a man of twenty-one years of age with definite signs of meningitis and tubercle bacilli in the cerebrospinal fluid. In this case the bacilli were still present on examination of the fluid at the third puncture, but a guinea pig that was injected with the fluid remained healthy, showing a decrease in the virulence of the organisms.

"A SIMPLE EXPEDIENT."

Adolf Nussbaum, of the Bonn surgical clinic, describes a simple expedient for the reduction of herniæ in infants. There are many cases of herniæ, he says, that show no signs of strangulation but are apparently irreducible. Whether they are actually so cannot be ascertained without an anæsthetic owing to the rigidity of the abdominal wall; and anæsthesia is not always advisable or convenient. The author noticed by chance that when one blew sharply upon a child's face it ceased crying at once and relaxed the abdomen. He has utilized this discovery with marked success. The child is placed upon its back with the pelvis raised and the head held so that it cannot turn it away, and an assistant blows sharply upon its face. Crying at once ceases, the abdomen relaxes, and taxis can be performed. The child breathes superficially for a time and when a few deep breaths indicate the onset of another attack of crying the face is again blown upon, until finally the hernia, if reducible, is replaced.

London, Ontario.

G. C. HALE.

Obituary

DR. L. C. PREVOST, of Ottawa, died of tuberculosis, at Saranac Lake, N.Y., on November 6th. Dr. Prevost, who was in the sixty-third year of his age, was born at St. Jerome, Que., and was educated in Montreal. He was a well-known gynæcologist and practised in Ottawa until about a year ago. During his professional career, Dr. Prevost held many important positions, among them the presidency of the Ontario Medical Association, the presidency of the French Canadian Institute at Ottawa, and membership in the International Association of Surgeons at Brussels.

DR. THEOPHILE LAFFERTY died recently at St. Mary's Hospital, Detroit. Dr. Lafferty was born near Amherstburg, Ont.; he was in the thirty-eighth year of his age. He was a graduate of the Detroit Medical College.

DR. CHARLES F. DURAND, of Toronto, died November 10th. Dr. Durand was born at Toronto and graduated in 1884 from the university of his native city. He was about fifty-one years of age.

The greater part of his professional career was spent in Buffalo and in Lockport, but he returned to Toronto some twelve months ago. He leaves a widow and two sons.

DR. JOHN CAVEN, of Toronto, died December 10th. Dr. Caven was born at St. Mary's, Ontario, in 1861, and was the eldest son of the late Principal Caven, of Knox College. He was a graduate of the Royal College of Surgeons. For seven years Dr. Caven was professor of pathology at Toronto University, and was one of Toronto's best known physicians.

DR. C. L. SMITH, of Medicine Hat, Alberta, died at St. Paul, Minnesota. Dr. Smith was a well-known resident of Medicine Hat, where he had been in practice for some years. He was keenly interested in municipal matters and was a member of the local Masonic lodge and of the Oddfellows. He was also C. P. R. physician for Lethbridge and district. He leaves a wife and two children.

DR. JOHN M. DEE, of Stamford, Ontario, died recently at the age of eighty. He was born at Stamford and was one of the best known practitioners in the Niagara peninsula. He continued his professional work until three years ago, when failing health made it necessary for him to retire from active practice.

DR. E. J. BERNARD, of Point St. Charles, Montreal, died at the Notre Dame Hospital, December 2nd. He was in the thirty-third year of his age and was unmarried.

DR. ARTHUR FISHER, of Montreal, died December 3rd, in the ninety-eighth year of his age. Born in Montreal on March 2nd, 1816, it was fitting the close of a long and useful life should come in his native city, where indeed most of that life had been spent. Dr. Fisher was educated in Montreal and in Edinburgh, where he took his degree in medicine: he was a licentiate of the Edinburgh Royal College of Surgeons. On his return to Montreal, Dr. Fisher took up the practice of medicine and became one of the first advocates of homeopathy, which he subsequently practised. He was a man of great intellectual power and a theorist in many respects in advance of his time. An exceptional man from many points of view, Dr. Fisher enjoyed the distinction of living under six different sovereigns. In politics he was an ardent Liberal, and as a citizen he was loyal and far-seeing. For some years he was blind and at the age of ninety-two regained his sight after an operation for cataract.

News

MARITIME PROVINCES

A SLIGHT epidemic of diphtheria recently occurred at Sunny Brae, a small place near Moncton.

THE following contagious and infectious diseases were reported in Moncton during the past year: diphtheria, 17 cases; typhoid, 22 cases, 3 deaths; scarlet fever, 4 cases; measles, 377 cases, 15 deaths. An epidemic of measles broke out in December, 1912, and during February, 1913, 150 cases of the disease were reported. The epidemic subsided in May, when 25 cases were reported.

ONTARIO

THE formal opening of the Essex County Tuberculosis Hospital, which has been built at Union by the Daughters of the Empire, took place on Sunday, November 9th. The total cost of the sanitarium, consisting of a main building with a wing on either side, has been \$25,000, the building and equipment amounting to \$13,000. The property extends over sixteen acres with over a thousand feet of lake frontage.

IT is probable that a by-law will be submitted this month to the ratepayers of Toronto with the object of providing \$200,000 for a new hospital in Riverdale.

SEVERAL cases of smallpox have been discovered by the provincial authorities at Buckingham and at Angers. At Angers concealed cases of the disease were found in twenty-three houses.

A SET of moving pictures on tuberculosis has been prepared by the provincial health department. They will be shown at different places throughout the province and free lectures will be given to illustrate and explain them.

A DEPUTATION representing the various women's institutes of the province recently waited upon the Minister of Education with

the request that the medical inspection of schools—both rural and urban—be made compulsory.

THE provisional plans have been passed for a new hospital at Nairn. A hospital is also to be built at Chapleau. It will be named the Chapleau Cottage Hospital and will include a dispensary and a training school for nurses.

THE town of Aberdeen is suffering from an outbreak of diphtheria. More than seven hundred cases of the disease have been reported since the beginning of last June. The disease has also been prevalent in Elginburg and Glenvale.

THE Hopewell Isolation Hospital at St. Thomas was dedicated on Thursday, November 20th. It will consist of three cottages, two of which are already completed; the third, which will be smaller than the other two, will be commenced very shortly and will be used for cases of smallpox.

THE question of the water supply was discussed at a recent meeting of the Niagara District Medical Association. The government is enlarging the Welland Canal with the result that the places situated along the banks of the canal will no longer be able to obtain from it their supply of fresh water. Dr. McCullough, however, assured the members of the association that a pipe would be laid from Port Colborne, by which water from Lake Erie would be supplied.

DURING the month of November, the following cases of communicable disease were reported in the province. The returns for tuberculosis are as yet far from complete. Smallpox, 54 cases; scarlet fever, 298 cases, 8 deaths; measles, 175 cases, 5 deaths; diphtheria, 319 cases, 22 deaths; whooping cough, 63 cases, 8 deaths; typhoid fever, 120 cases, 28 deaths; tuberculosis, 90 cases, 48 deaths; infantile paralysis, 1 case; cerebrospinal meningitis, 3 deaths. The total number of cases was 1,123, and of deaths 119, whereas in November, 1912, 864 cases and 136 deaths were reported.

THE new wing which has just been added to the St. Joseph's Hospital at Chatham, was opened December 1st. The hospital itself was first opened in 1892.

A GRANT of \$8,927 was made recently to the Sick Children's Hospital by the Toronto Board of Control. The amount will cover the cost of treating over twenty-five thousand patients during the past year.

A GRADUATE nurse is to be appointed to conduct the medical inspection of children in the public schools of Peterborough.

THE plans are being prepared for a new sanitarium at St. Catharines.

AS PART of an educational campaign against tuberculosis, which is being conducted by the National Sanitarium Association, addresses on tuberculosis and on simple rules of health were given in schools throughout the province on Friday, November 28th, and every possible means taken to impress upon the minds of the children useful facts concerning the disease. On Sunday, November 30th, reference to the campaign was made in sermons given in many of the churches of the province.

BY-LAWS will be submitted to the ratepayers of Toronto at the beginning of this month, to grant \$250,000 each to the proposed Riverdale and Howard Park Hospitals. If the grants are made, however, nothing will be paid to either of the hospital boards until subscriptions amounting to \$50,000 have been guaranteed from other sources.

ONE hundred and sixty-four cases of contagious disease were reported in Ottawa during the month of November. They were: scarlet fever, 62; diphtheria, 48; smallpox, 10; chicken pox, 20; tuberculosis, 9; typhoid fever, 6; measles, 7; and whooping cough, 2.

THE annual report of the medical officer of health for Wellesley township shows that during the year three outbreaks of small-pox have occurred. In most instances the cases have been extremely mild in character, but a few were of more severe type. There has been also a good deal of measles throughout the year, and a good deal of typhoid during the summer and autumn months.

THE fees charged by the physicians of Windsor and district have been advanced, commencing from the first of the month. In

future, a charge of three dollars will be made for night calls, two dollars for day visits, and fifty cents for advice given by telephone.

QUEBEC

DR. PAQUIN has been appointed chief medical officer of the city of Quebec, at a salary of \$2,000 a year, in place of Dr. Catellier, who is now consulting physician for the city, also at a salary of \$2,000 a year. Dr. Gosselin has been appointed assistant to Dr. Paquin and will receive \$1,200 a year.

DURING the week ending November 29th, fifty-four cases of diphtheria and five resultant deaths were reported in Montreal. There were reported also thirty-four cases of scarlet fever and forty-four of chicken-pox.

THE contract has been given for an addition to the Notre Dame Hospital, at Montreal. This addition will take the form of a building of four storeys, of stone and steel construction with concrete foundation. The cost is estimated at twelve thousand dollars.

DR. LOUIS LABERGE, who has held the position of medical officer of health at Montreal for twenty-seven years, has resigned and Dr. Sepherin Boucher has been appointed to succeed him.

AN epidemic of typhoid is reported from the village of La Patrie, situated nine miles from Scotstown. Fifty cases already have occurred, only one of which has resulted in death.

AFTER considerable discussion concerning the site, it has been decided to build the Quebec Hospital on a property belonging to the Grey Nuns. The site has been given by the nuns, who are in charge of the Beauport Asylum, in exchange for the grounds and buildings of the Mastai institution which was annexed some time ago by the city of Quebec. The plans have now been prepared for a building which will cost about seventy-five thousand dollars.

MANITOBA

DR. GRAIN has been appointed medical superintendent of the Manitoba Indian Reserves, to succeed the late Dr. Orton.

A MEDICAL inspection of children in the schools of Portage

La Prairie has been commenced. The inspection has been undertaken by Dr. E. A. Walkey, the medical officer of health, and Dr. W. H. Rennie.

THE grant made by the city of Winnipeg to the Grace Hospital has been increased from \$1,500 to \$2,000. During the past twelve months, 481 adult charity patients and 630 children have been treated in the hospital, and of these only 200 were able to make a daily payment of one dollar towards the expenses incurred by the hospital.

THE plans and specifications have been prepared for an extension to the Selkirk Hospital for the Insane.

ALBERTA

THE following cases of infectious disease occurred in Edmonton during the month of October: diphtheria, 12; scarlet fever, 8; erysipelas, 5; typhoid fever, 23; chicken-pox, 3; measles, 6; mumps, 1.

AT a recent meeting of the directors of the Macleod Hospital, it was decided that a list of questions respecting the financial condition of a patient should be signed on admission, and on discharge a promissary note should be given by the patient, this note to mature not later than one month from date of discharge. It was also decided that in the case of patients suffering from the effects of excessive drinking, all fees should be paid in advance in addition to the twenty-five dollars chargeable to such cases on admission.

SASKATCHEWAN

BY-LAWS for two thousand five hundred dollars are to be submitted to the ratepayers of the town and of the municipality of Rosthern; the money, if granted, will be used to purchase the Alexandra Hospital at Rosthern.

THE following is a list of the cases of infectious and contagious disease reported in the province during the month of October; typhoid fever, 118; diphtheria, 4; scarlet fever, 30; measles, 5; smallpox, 1; chicken-pox, 18; tuberculosis, 3; whooping cough, 35; mumps, 1; cerebrospinal meningitis, 1.

THE old hospital at Kerrobert, which was built by Dr. Neville and Dr. Sterling, and has been closed for some time, is now to be reopened. It is a commodious eight-roomed building, containing five wards and an operating room.

BRITISH COLUMBIA

THE following is the list of candidates who have passed successfully the examinations of the College of Physicians and Surgeons of British Columbia: Drs. T. H. Agnew, H. L. Bryce, A. J. Brown, J. Christie, G. E. Darby, O. E. Finch, A. R. Gilchrist, H. Grey, W. R. Haight, G. Jefferson, R. E. Johnson, W. T. Lockhart, J. J. Mason, M. T. McEachern, J. E. Montgomery, H. H. Planche, H. H. Perry, W. L. Robinson, L. M. Rice, J. A. Smith, J. L. Telford, H. A. Watson, J. H. Wilkinson.

IN future, all persons travelling from the United States to British Columbia, if called upon to do so, must produce certificates of vaccination dated within six months of the time of presentation. This regulation has been made because of the prevalence of small-pox in certain parts of the State of Washington.

IT is the intention to erect a new building for the sanitarium at Tranquille. The present building is old and out of date.

AT the monthly meeting of the Victorian Order of Nurses for Canada, held December 4th, application for \$1,500 was made, and granted, towards the building of a much needed hospital at Ganges, Salt Spring Island.

ASSOCIATION NEWS

THE forty-seventh annual meeting of the Canadian Medical Association is to be held in St. John, New Brunswick, from July 7th to 10th, 1914. Dr. Murray MacLaren is the president-elect, and Dr. G. C. VanWart, Fredericton, vice-president for New Brunswick. The date of the meeting was given a great deal of consideration, and July 7th, it is felt, will be found suitable in every way. Not only does it conflict as little as possible with other association meetings, but it is the ideal time of the year for a trip down by the sea. The members of the profession in St. John are en-

thusiastic over the pleasant duty which falls to their lot, and early in September they organized and appointed committees to carry out the details of the work. These committees have been actively engaged since that time in perfecting arrangements, so much so that the preliminary details are practically completed.

The chairman of the committee of arrangements is Dr. J. V. Anglin, and the local secretary Dr. J. S. Bentley; and the local chairmen and secretaries of the various sub-committees are respectively as follows. medicine, S. S. Skinner and A. E. Logie; surgery, A. F. Emery and L. M. Curren; obstetrics and gynecology, G. A. B. Addy and C. M. Pratt; public health, laboratory work and pathology, J. W. Daniel and W. Warwick; eye, ear, nose and throat, J. R. McIntosh and A. P. Crockett; x-rays, G. G. Corbet and J. L. Duval; finance, T. E. Bishop and W. E. Rowley; reception, Thos. Walker and F. T. Dunlop; transportation and publicity, W. A. Christie and G. G. Melvin; accommodation, W. F. Roberts and A. E. Macaulay; exhibits, T. D. Walker and D. C. Malcolm; entertainment, F. L. Kenny and F. J. Hogan; credentials and registration, J. M. Barry and C. M. Kelly. They will be glad to receive suggestions, or to give any information in their various departments.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Canada Lancet, December, 1913:

School hygiene and child life	Sir James Grant.
The language of the abdomen	S. M. Hay.
President's address: Academy of Medicine, Toronto	H. J. Hamilton.
Foreign bodies within the eyeball	G. S. Ryerson.

Western Canada Medical Journal, October, 1913:

Serums, bacterial vaccines, and phylacogens	Bruce Hill.
Closure of perforation of septum of the nose	C.B. Bearman.
Police control of prostitution	G.S. Peterkin.

Dominion Medical Monthly, December, 1913:

President's address—delivered before the
Academy of Medicine, Toronto . H. J. Hamilton.

The Public Health Journal, November, 1913:

Why are modern infectious disease mild? . H. W. Hill.
Civil engineering and its relation to public
health J. Antonisen.
Dental caries in school children and dental
inspection W. D. Cowan.
The need for more complete organization in
public health work H. J. Pickard.

The Canadian Journal of Medicine and Surgery, December, 1913:

Foreign bodies in the air passages . . R. J. Godlee.
The modern treatment of gastric disease . J. Patterson.
The association of chorea with rheumatism . H. Parsons.
Heart lesions in rheumatism A. R. Gordon.
Rheumatism in childhood J. S. Graham.
Rheumatism in adults W. J. Wilson.

Le Bulletin Médical de Québec, December, 1913:

/La greffe osseuse comme traitement curatif
dans le mal de Pott C. Geggie.
Un cas d'empoisonnement par l'Huile de
cèdre A. Jobin.
Comment combattre avec efficacité la Tu-
berculose dans les municipalités rurales . J. Savary.

The Western Medical News, November, 1913:

Sanatorium care of the tuberculous . . . W. M. Hart.

The Canadian Practitioner and Review, December, 1913:

The employment of radium in the treat-
ment of cancer of the prostate . . . O. Pasteur.
and Dr. Degrais.

L'Union Médicale du Canada, December, 1913:

Pseudarthrose de l'humerus. Etude (1) J. A. St. Pierre.

Le Journal de Médecine et de Chirurgie, November, 1913:

La constante d'Ambard G. H. Baril.

Medical Societies

TORONTO ACADEMY OF MEDICINE

At a special meeting of the Toronto Academy of Medicine, which took place November 24th, an address on "Modern treatment of gastric disease" was delivered by Mr. Herbert J. Patterson, of London. A discussion of some length ensued, opened by Dr. H. A. Bruce, in which Drs. Primrose, McKeown, and Graham Chambers took part. Dr. Primrose referred to the value of the gastro-jejunostomy operation in cases of duodenal ulcer and gastric carcinoma. He also spoke of the importance attached by Dr. Patterson to gastric analysis as a very material aid to diagnosis, expressing the opinion that the method would be employed more frequently in the future by those who had enjoyed the privilege of listening to Dr. Patterson's address. Referring to the question of pain in the epigastrium in cases of appendicitis, Dr. McKeown thought it probable that it was due rather to gaseous distension or spasm of the pylorus than to actual irritation of the mucous membrane of the stomach by the presence of an increased quantity of acid. He was somewhat doubtful of the beneficial results of blood transfusion. He also referred to a statement made by Dr. Primrose, that cancer may result from ulcer of the stomach, contending that if this were so, carcinoma of the duodenum would be much more common, since duodenal ulcer is more frequently met with than is gastric ulcer. He was glad to hear Mr. Patterson say that in hæmorrhage of the stomach it was better not to operate. Dr. Graham Chambers suggested that in many instances surgeons were inclined to base a diagnosis upon a physical examination taken in conjunction with one or two subjective symptoms, without studying sufficiently other aspects of the case with its previous history. He thought that appendicitis was often preceded by gastric disease, and referred to the nervous origin of many cases of gastric and duodenal ulcer. In cases of slight stenosis, he considered that medical treatment might be effectual, but surgical intervention was necessary where there existed pyloric stenosis due to scar tissue.

Dr. Bruce then moved a vote of thanks to Mr. Patterson. He said that Mr. Patterson was well fitted to give such a paper on

gastric surgery, as some years ago he was Hunterian Professor and delivered a number of lectures before the Royal College of Surgeons on the same subject. Last year, Mr. Patterson published a book on gastric surgery, which is now running through the second edition and is considered the finest text-book extant on the subject. Dr. Bruce felt that he expressed the feeling of all those present when he said that it has afforded them the keenest pleasure to listen to the masterly address which had just been delivered. Dr. Cotton, in seconding the motion, said that but a few years ago physicians had given learned discourses on the treatment of indigestion; now, however, through the good work of Mr. Patterson, the Mayos, and others, the tables were turned, and the question was treated more from the surgical standpoint.

In reply, Mr. Patterson expressed his pleasure in speaking before the Academy and in listening to the discussion evoked by his paper. Referring to a question put by Dr. Primrose concerning the cause of failure in the operation of gastro-jejunostomy, he said that in his opinion failure was the frequent result of an unnecessary operation, or of an operation performed when some other condition was present, such as disease of the appendix, intestinal stasis, or gallstones. The position of the opening in the stomach was important; it should be at the pyloric end of the stomach and as close to the pylorus as possible. Continuing, he said that there was great disadvantage in making this opening by the posterior method, as working from the back of the stomach, one cannot make the opening as close to the pylorus as by the anterior method. The posterior method is physiologically unsound but anatomically good, and he had obtained better results by the adoption of the anterior method. He did not dispute the fact that carcinoma occasionally becomes grafted upon chronic ulcers, but he did not think that it was such a frequent occurrence as was taught by the Mayos. As to the cause of epigastric pain, he was of the opinion that it was due probably to the increase of acid after digestion and the consequent irritation of the ulcer. Dr. Chambers had suggested that the administration of alkalis by the mouth might be of benefit, and an operation avoided by this means. In this connexion he would like to point out that the stomach would get accustomed to such alkalis and that consequently their value would be lessened. Sometimes two or three years washing out of the stomach would do good, but it would not cure; after a gastro-jejunostomy the patient is cured.

The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

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VOL. IV

TORONTO, FEBRUARY, 1914

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The Canadian Medical Association Journal

Vol. IV.

FEBRUARY, 1914

No. 2

THE TRIPLE ALLIANCE: HEART, KIDNEY, AND ARTERIAL DISEASE*

BY OSKAR KLOTZ, M.D.

Pittsburgh, Pa.

THE simultaneous presence of chronic heart, kidney, and arterial disease is not so uncommon in individuals above middle age. It does not make its appearance in the same characters in the different cases, but when more closely analyzed clinically or studied pathologically, we find similar earmarks of disease in each of the three organs. At times the condition of the heart, at others the finding of Bright's disease, or it may be the sudden development of cerebral conditions, calls our attention to the particular system, suffering the greatest strain, and we are apt, erroneously, to refer to that organ as the sole region of disease. These combinations of heart, kidney, and arterial disease, or any two of them, are most commonly brought to our attention when the process, from a pathological point of view, has become chronic. In no way do we face an acute lesion of an organ, but only the manifestations of a process insidiously progressive, and clinically recognizable late in its development. A correlation of the many facts bearing upon the condition which I have termed the triple alliance, is, I believe, possible.

A physiological alliance has been recognized as existing between the heart, arteries, and the kidneys. The proper function of each is, to some extent, dependent upon the healthy activities of the others. The relationship is perhaps more prominently brought out in the dependence of the function of the kidney as related to the

*From the Pathological Laboratories, University of Pittsburgh, Pittsburgh, Pa.

Read before the Academy of Medicine, Toronto, December 2, 1913.

For discussion see page 158.

heart, while a similar relationship also exists between the heart and the circulation in the arteries. To a great extent this relationship centres around the question of blood pressure within the arteries. It is realized, too, that this blood pressure is normally altered with great ease and that the alteration is observed by a greater or less response in all of these organs. From the recognition of the physiological interdependence of the activities of this group, have proceeded the theories that many of the pathological processes arising in any one, have their explanation in changes occurring in one or both of the other organs.

The lesions which we recognize in heart, kidney, and arterial disease, are of the character of sclerosis in each. The heart is hypertrophied, mainly in its left ventricle, and shows areas of sclerosis throughout its musculature. The arteries are thickened with more or less distortion of their lumina, although the altered calibre may not be referable to intimal sclerosis. The kidneys are small and fibrosed, showing characters that we readily classify as chronic interstitial nephritis. In the fully developed cases of heart, kidney, and arterial disease, the fibroses of these organs are marked, though the relative extent of the cirrhotic change differs in each case, sometimes being most marked in the heart, at other times showing an unusual arterial sclerosis or, again, having marked chronic interstitial reactions in the kidneys. Because of the variation in the quantitative deposition of fibrous tissue there has been much speculation in suggesting the disease or the organ which was primarily at fault.

Bright and subsequent pathologists recognized the association of the contracted kidney with morbid changes in other parts of the body, particularly in the presence of hypertrophy of the heart. It was generally believed that the kidney was the organ primarily affected and that other bodily conditions were secondary.

The hypertrophy of the heart has been explained on a purely mechanical basis as due to the difficulty of the circulation in the cirrhotic kidneys. Ewald and, later, Loeb have suggested that the heart lesions were the result of increased work brought about by the greater viscosity of the blood. Others (Hasenfeld and Hirsch) have found that the cardiac hypertrophy was associated particularly with a sclerosis of the splanchnic vessels while sclerosis in the remaining portion of the peripheral tree, they believed, had less effect.

In the belief that the kidney was primarily involved in disease and was followed by the retention of a variety of products of meta-

bolism, it was held by some that both the heart and arterial lesions were the result of a chemical irritation. The retained substances, it was claimed, had a direct effect upon the musculature of the heart as well as upon the arteries. It was also suggested that besides this the direct toxic effect of the retained excretions caused a persistent high blood pressure induced by arterial spasm. More recently it has been suggested that chronic kidney disease is accomplished by an abnormal function of the adrenal glands, associated with a greater production of adrenalin. This, it is claimed, leads to a tonic spasm, or contraction of the arterial walls, materially raising the blood pressure to which the cardiac hypertrophy is a response. Thus a variety of factors have been suggested as initiating the hypertrophy of the heart secondary to other diseases.

Even under the circumstances where cardiac hypertrophy is recognized clinically, the heart condition may not have reached the final stage of the process. Insufficiency of the myocardium may yet develop, particularly in the presence of a subsequent disease, as myocarditis, or with a progressive sclerosis of the coronary arteries. These changes, however, are rather to be viewed as complications and sequelæ which do not assist in clearing up the nature and process of the primary disease causing the hypertrophy.

Undoubtedly, when a definite sclerosis of the large and small arteries has occurred, the increased resistance rapidly leads to an alteration in the circulation. The maintenance of an equal supply of blood in the peripheral arterioles demands greater activities on the part of the heart, and whether the heart may properly compensate for this increased demand depends, in the individual case, upon the reserve activities of the musculature. An adequate nutrition, using the term in its broadest sense, will permit the myocardium to compensate by hypertrophy. It may be, as suggested by some, that prior to the arteriosclerosis, the heart may show no evidence of enlargement, but it would be going too far to say that in the absence of recognizable hypertrophic changes, the heart had not previously suffered myocardial lesions. It may be, as some have indicated (Hasenfeld, Romberg), that though the heart be damaged by degeneration, the hypertrophy does not arise until the musculature is given the stimulus for growth by suffering undue stretching.

Hirsch examined a series of cases with cardiac hypertrophy and found that where this hypertrophy was associated with arteriosclerosis, the left ventricle was mainly or alone involved. He also observed that when diseases of the lung and pleura had an effect

upon the pulmonary circulation, the hypertrophy of the heart was mainly on the right side. In a third group of cases those having chronic nephritis, a few showed hypertrophy of the left ventricle alone, but the majority showed that the hypertrophy involved both right and left heart, though the increase was greater upon the left side than the right. It was assumed by Stewart that this latter condition arose from an increased peripheral resistance in an increased viscosity of the blood acting primarily upon the arterioles and then upon the left ventricle. It is also indicated that the cardiac hypertrophy without valvular disease, associated with arteriosclerosis, while more especially affecting the left ventricle, is also present in the auricles (Hirsch). These authors claim that no pathological factor other than that mentioned is available for explanation. In his experimental work Stewart has been able to show that a hypertrophy may be induced by the production of aortic insufficiency and is the result of increased work.

The spirit has gone abroad that wherever arteriosclerosis is present in the body, there must be some increase in the blood pressure. Yet, when this is put to test, it is found that there is no uniform relation between them. Sawada found that in only about 12 per cent. of arteriosclerotics was there a heightened pressure. Romberg noted that in some districts arteriosclerosis was unaccompanied by increased pressure while in others it was the common manifestation. He points out, however, that in the latter chronic interstitial nephritis was a complication. Thus he indicated that arteriosclerosis with nephritis and arteriosclerosis without nephritis may occur in unequal proportion among different people.

There are so many factors which appear to influence the development of chronic disease of the heart, kidney, or arteries, that much speculation has been indulged in respecting the importance of each. Richard Bright, who was among the first to give definite recognition to these associated processes, looked upon the kidney disease as the prime causative factor for hypertrophy of heart. These contentions of Bright were opposed by Rayer, who denied the common association of heart and kidney diseases. Even Frerichs opposed Bright's view and claimed that cardiac hypertrophy preceded the nephritis. Up to this time much confusion existed in the classification of Bright's disease and difficulty was expressed in segregating the types, so that a proper comparison could not be made of the relationship of the diseased process to that in other organs. Traube, in 1845, divided Bright's disease into several groups, in one of which he found heart disease was particu-

larly prone to occur. He believed that some cardiac affections could lead to kidney disease, other than infarction, and eventually to chronic changes. Cardiac hypertrophy, he observed, occurred mainly with the contracted kidney and the left ventricle responded most promptly. This exposition by Traube was favourably received and indicated progress in the recognition of a variety of lesions in the kidney. Johnson, in 1852, noted the association of thickened arteries with chronic Bright's disease. The arterial change he viewed as hypertrophy of the media resulting from an impure blood containing urinary excreta. The minute arteries, it was thought, resisted the passage of this abnormal blood and the heart putting forth an increased effort developed a hypertrophy of the left ventricle.

In 1872 Gull and Sutton again attracted attention to the association of cardiac hypertrophy with chronic nephritis and arterial disease. They were, however, insistent that the cardiac condition was not secondary to the disease in the kidney, but resulted from a general arterio-capillary fibrosis. This vascular lesion they believed was not isolated to any part of the body, but was generalized, involving all the small arterioles. The vascular changes were present in the heart muscle as well as the kidney and other parenchymatous organs. It was claimed that this widespread arterial disease bore the same relationship to the interstitial myocarditis, as did the acute softening of the heart muscle to the embolic process of the coronary arteries as described by Virchow. These contentions of Gull and Sutton were substantiated by Buhl, Koester, Huber, Sternberg, and others. The cardiac disease was looked upon as resulting from an altered nutrition consequent to the coronary sclerosis. Previous to these observations much stress has been laid upon so-called idiopathic hypertrophy of the heart.

Gull and Sutton showed that the vascular lesions were independent of renal disease and that the kidney condition was a manifestation of a more general systemic process. Furthermore, they indicated that in other kidney diseases where much destruction of renal substance had taken place, with the probable retention of excreta, no cardiac hypertrophy was found. That cardiac hypertrophy was not the result of renal disease was illustrated in the fact that it might occur without the presence of kidney involvement, as well as preceding chronic Bright's disease. The authors observed a hyaline fibrous change about the vessels of the heart similar to that which they had found in the kidney. This they considered

was, in part at least, the cause of the hypertrophy. Gull and Sutton observed that the arteries in the pia mater in chronic interstitial nephritis sometimes showed a thickening of the intima, sometimes a hypertrophy of the media, but more commonly a fibrosis surrounding the vessel. The media sometimes was atrophied. These same changes were further found in the skin, stomach, spleen, lungs, heart, and kidneys. In a table of ages of patients examined, the authors have found that granular conditions of the kidney belong to a period of life at or over forty years of age. However, in the few cases in which the condition was found before the age of forty, the general disease process simulated those at more advanced ages. Here, too, there was observed the periarterial thickening accompanied by hypertrophy of the heart. They pointed out that clinically the manifestations of this general disease might be such that no attention is attracted to the heart, kidney, or arteries, but only after other progressive changes have damaged one of these systems may we recognize the presence of chronic Bright's disease with its accompanying manifestations. In the early stages the symptoms depending upon the intensity of the vascular involvement may be more evident in diverse parts of the body. In conclusion they recognized a systemic disease of the arterioles and capillaries which, as a periarterial fibrosis, may begin in the kidney, but which also has its pathological changes in other organs.

Our attention must not be too closely centred upon the conditions arising in any one organ. A general perspective of the lesions throughout the body is essential, and for this purpose nothing short of a combined study of many regions will allow us a proper interpretation of the diseased processes in question. It is furthermore necessary to study the disease in its various stages of development. Too much stress has been laid upon the importance of the pathological changes in the heart, kidney, or the arteries after one or other of them has suffered severely. To indicate that the heart and arteries are subject to a sclerosis in chronic interstitial nephritis is simply a statement of the gross pathological features observed in an individual after he has passed through consecutive stages of a disease and arrived at a point where the functional activities of several organs are so impaired that a continuance of healthy life is impossible.

Thus the observations upon the clinical pathology of these associated diseases are far from clearing up the moot points concerning the importance of common processes. Difficulty is experienced in indicating the beginning of a sequence of changes whose

manifestations are not the same, and whose recognition is only late in the progress of those changes. Some of the clinical features have been explained upon pathological findings. But here again much difficulty has been experienced in indicating the order in which the lesions have occurred. Conclusions have been drawn from studies made upon fully developed cases alone. In respect to these, the observers do not differ so much in the recognition of the lesions, but in the importance of each as dominating the presence and progress of others.

Senator points out that while there are a great number of factors which, upon purely theoretical grounds, may be suggested as the causative factor leading to cardiac hypertrophy, it is probable that no single cause may be found to account for all, as the individual conditions differ considerably in each case. Thus he believes that the increased viscosity of the blood, the narrowing of the capillary bed, the thickening of the muscular coat of the arterioles, the resistance of the blood stream displayed by the visceral arteries, as well as other factors, might be important causes for some cases, yet each will not act with equal intensity in the different individuals. He has further observed that the molecular concentration of the blood differs in the different forms of nephritis. The blood contains substances which are toxic for various tissue and the character and concentration of the albumens are altered. These changes have a direct effect on the heart muscle as well as an irritating action on the vessel walls, stimulating them to contraction.

He points out that chronic interstitial nephritis is a slowly progressive disease in which the changes do not occur suddenly. The altered blood content gradually acts upon the vessel walls, leading to histological changes as well as functional incapacity of their tissues. The circulatory change as well as the direct effect of the altered blood upon the heart is, he believes, the main cause for cardiac hypertrophy. He further suggests, however, that it is quite possible for the true causative factor to exist outside of the heart and kidney and to attack these organs simultaneously.

Although fibrous myocarditis was noted by Venivienne (1529) and later discussed by Morgagni, its nature was not appreciated until 1806, when Corvisart recognized it as an inflammatory process and believed that it was always associated with a pericarditis or an endocarditis.

Pathologically the chronic fibrous myocarditis indicates a replacement of the muscular tissue of the heart by connective tissue. The left ventricle is mostly involved. Commonly when

small patches of fibroses are observed in the heart it is found that they had given no clinical evidence of their presence. It has, however, been demonstrated that the presence of connective tissue greatly interferes with the function of the heart by reducing its elasticity as well as its contractile power. Its association with cardiac hypertrophy has been commented upon, while Rigal and Juhel-Renoy have applied the term "*myocardite-scléreuse hypertrophique*," to this association. Leyden called attention to the several forms of cardiac sclerosis, sometimes observed in a diffuse and scattered manner while in other individuals isolated plaques are found. Koester drew attention to the frequency of the process and indicated the more important pathological characteristics of the disease. The fibrous areas appear as parallel tendinous streaks following the direction of the muscle cells. The distribution of these areas is not uniform. They are commonly present at the apex while the posterior and upper portion of the left ventricle may also show much involvement. They are prone to lie quite superficially either directly beneath the pericardium or close to the endocardium. The papillary muscles of the left ventricle are also structures showing a predilection for this process. Koester was able to observe that this development of connective tissue in the heart resulted from two different causes, on the one hand associated with inflammation with secondary destruction of the muscle fibres, or otherwise as a degenerative process without inflammatory change and associated with disturbance of the coronary arterioles. The former type is the one which is particularly associated with kidney and arterial disease. The distribution of the lesions in the heart muscle is quite characteristic, and may be observed in different stages of development. Inflammation precedes the development of the connective tissue in all. Koester believed that this myocarditis had its origin in infection, while Ruehle observed that it was most commonly associated with rheumatism. It was likewise pointed out by others that myocarditis as it occurs in rheumatism and its allied diseases was associated with endocarditis and pericarditis.

Aschoff and others have described an acute non-suppurative lesion of the myocardium occurring during an attack of acute rheumatic fever, acute articular rheumatism, muscular rheumatism, and rheumatoid affections. This heart lesion is quite distinctive and differs from that observed in infections by pyogenic organisms as well as by a variety of specific organisms. The lesions in the heart are focal and develop in the vicinity of the nutrient vessels

of the myocardium. Isolated areas of inflammatory exudate surround the small arterioles leading to greater or less degeneration of the musculature in the vicinity. The greatest amount of damage by these foci is produced in the outermost coat of these vessels and in the tissues immediately surrounding them. The small arterioles are in themselves not extensively involved during the acute stage. Gradually, however, as the process enters upon a chronic stage there is a thickening of the vessel wall, partly due to an hypertrophy, but mainly due to a fibrosis occurring in the adventitia with some thickening of the media. The total bulk of heart that is affected by this perivascular inflammation, is considerable, and the myocardial weakening observed in these affections is the result of the degeneration of the heart muscle occurring immediately about the nutrient vessels.

These observations by Aschoff and Tawara were confirmed in experimental studies by Waechter and others. It was shown that when organisms (streptococci) isolated from cases of acute rheumatic fever and the milder allied diseases, were inoculated into susceptible animals, tissue disturbances simulating the original disease in man could be readily induced. Not alone were the clinical manifestations reproduced but lesions occurred in the myocardium of a nature similar to those noted in the human heart. The lesions have been found so characteristic that from the myocardial picture alone the diagnosis of a rheumatic affection could be made. In a series of experiments to which we will refer again we have been able to confirm the findings of Waechter.

In an individual study reported upon during the past year we have made observations upon the various arteries of the body during acute rheumatic fever. It was observed that the larger vessels, and more particularly the arch of the aorta, which are supplied by nutrient vessels advancing into the outer and middle coat, suffered a non-suppurative inflammatory reaction similar to that found in the heart. This reaction was of the same character as that in the myocardium and was disposed in a perivascular manner. The vasa vasorum of the arteries take the place of the small divisions of the coronary arteries of the heart. These vasa vasorum carry the burden of the reaction in the vessel wall. Accompanying the reaction there is a certain destruction of the essential elements of the arterial coat, leaving the vessel weaker and subject to subsequent fibrous replacement of its own tissue. In our earlier studies it appeared to us that the peripheral arteries did not become involved. This conclusion was mainly drawn from a study of arteries

of intermediate size which passed to the limbs and to the main viscera. It is true that in the majority of cases these moderate sized arteries of the muscular type show no evidence of inflammatory invasion. Nevertheless, as we then indicated, an irregular distribution of the inflammatory reaction may be observed in some of the arterioles when the larger visceral arteries are not involved.

In the cases which we have examined, the simultaneous occurrence of lesions in the myocardium and the arteries has been very constant. The intensity of the reaction in each or both has been varied; at times that in the heart being greater and out of proportion to that in the arteries, at other times again, the reverse was observed. Moreover, we have been able to follow the processes during the various stages of development. From the acute non-suppurative variety with extensive perivascular infiltration of the small arterioles all gradations of chronicity with progressive fibrosis have been found. The amount of fibrosis occurring in the vicinity of the arterioles was dependent upon the intensity of the reaction, and the extent to which the neighboring parenchymatous tissue was affected. From the minute, microscopic fibrous tissue masses to the larger fibrous streaks, such as are observed in the heart and large vessels, all degrees and stages were demonstrated.

It is in association with these particular arterial lesions that hypertrophy of the heart is prone to develop. This hypertrophy, however, does not begin to show itself until the reparative processes about the minute vascular channels become evident. In many cases the heart suffers some dilatation of its cavities during the acute stages, but though the heart at this time is receiving the stimulus for growth through stretching, it is unable to compensate so early by hypertrophy on account of the systemic illness, which offers the explanation in an inadequate nutrition. Hypertrophy does not begin until recovery from the effects of the immediate acute involvement has passed over. Repair of the inflammatory focus does not begin until, in part, at least, the infection is overcome. From this time on not alone is there a repair of the lesion induced during the inflammatory reaction, but also opportunity is given for the compensation of the weakened myocardium sustained in muscular degeneration.

When, now, we suggest a type of kidney lesion ending in chronic interstitial nephritis as commonly associated with this combination of acute and subacute myocarditis and arteritis, we will receive considerable opposition from clinical observers. The constancy of association of myocarditis and mesarterial diseases has

gradually impressed itself upon us so that we view this occurrence as the usual lesion in certain forms of infection. We have hardly reached the time when all are willing to place definite forms of kidney disease in the same group. Nevertheless, an examination of human material as well as experimental studies force us to accept this view. As is true with so many forms of non-suppurative infections in which a bacteriæmia is temporarily and periodically present, many of the organs suffer unequally. The bacterial attack upon various tissues is only an incident in the disease, and it would be impossible to designate the lesion in each organ as a common or constant manifestation.

With the type of infection which dominates acute and subacute cardiac disease, we recognize organisms which are not constant in their virulence, which are sporadic in their systemic distribution and which are very uncertain in their localization in the tissues of the body. At times, during a given illness a dissemination of bacteria occurs in the blood stream for short periods of time, then the circulation is rapidly freed from the meteor-like distribution, only to be involved in a subsequent and similar reinfection from a local focus. The disease does not carry with it a constant bacteriæmia.

As, then, the hæmatogenic infection of different organs is so uncertain and unequal, the lesions arising in different cases are difficult of comparison. We have, however, found that inflammatory changes arising in the interstitial tissue of the kidney were not so uncommon in these infections. In the milder forms where the kidney was least involved and where clinical evidence of a nephritis was wanting, the lesion consisted of a lymphocytic and plasma cell infiltration in the interstitial tissue close to the interlobular arterioles. This subacute inflammatory reaction was distributed mainly about the arterioles and began in about the middle of the medulla. The inner coats of these arteries were not appreciably altered but the adventitia was quite loose and oedematous with an infiltration of lymphocytes. From the perivascular lesion the inflammatory exudate spread along the course of the vessel into the cortex, so that streaks of infiltration could be followed from the medulla to the surface of the organ. Primarily, this perivascular non-suppurative inflammation with its oedema gave a more bulky appearance to the involved areas. The tubules of the vicinity were surrounded by the exudate of cells while but little change occurred in the epithelial lining. Similarly, the capsules of the neighbouring glomeruli were not uncommonly surrounded by a similar infiltration.

For the most part the inflammatory reaction was present in radiating zones, leaving intervening patches of kidney tissue uninvolved. The larger vessels near the base of the pyramids also showed a perivascular reaction, but the main artery to the kidney was, in itself, devoid of inflammatory change.

This non-suppurative inflammatory reaction beginning in the vicinity of the interlobular vessels and extending through the cortex appears to be a typical lesion associated with the common subacute inflammation of the myocardium. In the human organs, however, it is usually associated with other lesions which tend to obliterate the character here described. Individuals dying during the first attack of acute infective myocardial disease have commonly extensive endocardial vegetations. The presence of embolic masses of small or large size is apt to involve the kidney in a well marked infarct or lead to the occlusion of the vessels to the glomeruli with subsequent changes in these structures, not definitely to be viewed as the typical lesion of the disease.

We must, however, recognize a form of acute glomerulonephritis with the local exudate, and occasionally showing a proliferative reaction within the glomerulus or its capsule, as a common reaction of the kidney. The presence of an acute glomerulonephritis in a number of bacterial diseases is now well recognized, particularly through the work of Councilman and Loehlein.

The observations upon the various types of acute non-suppurative nephritis, indicate the close relation of the lesion to the circulatory apparatus. That at times the lesion is greater in the glomerulus while at others the perivascular reaction appears more intense, is not to be wondered at, when we remember the unequal reaction in tissues by many varieties of bacteria. Moreover, the different forms of reaction occurring within the glomeruli may well be variations in the intensity of reaction to a single strain of organism. Thus, as has been amply illustrated in late years, a single irritating agent such as uranium nitrate may give rise to tubular, glomerular, and even vascular lesions in the kidney. We have repeatedly observed a variety of pathological processes in different glomeruli brought about by the same bacterial agent.

These inflammatory disturbances of the kidney, showing their main reaction about the blood vessels and their associated parts, were observed in the early stages of heart and arterial disease. When closely analyzed it will be observed that the reaction in each of these tissues, heart, kidney, and arteries is very similar. There is a type of subacute inflammation particularly distributed in the

vicinity of the small nutrient vessels, disturbing the parenchymatous tissue in the immediate vicinity. We have indicated the late effect of this inflammation upon the heart muscle as well as the disturbance of the media of the arteries. We now call attention to the effect of the inflammatory reaction upon kidney tissue.

In the milder conditions the reaction remains localized in the vicinity of the vessels, causing but little disturbance of the tubules or glomeruli. An œdema pervades the intertubular connective tissue in the interlobular zone. Relatively little kidney tissue is involved by this localized inflammation, although streaks of reaction follow many of the small cortical arterioles. Where the reaction is more intense the infiltration spreads for some distance into the cortex involving considerable areas in an irritative process. More or less tubular degeneration may be present and granular debris appears within the secreting structures. The glomeruli may be involved in congestion with proliferation or show the presence of a lymphocytic infiltration amidst the capillary loops. Some of the glomeruli may become occluded and undergo hyaline change. Crescentic spaces between the glomerulus and its capsule show the presence of debris and hyaline masses. Occasionally hyaline and granular casts are found within the tubules.

As these inflammatory lesions progress to the chronic stages, the perivascular areas of infiltration become replaced by connective tissue. There appears to be a large gap in the observations, both clinical and pathological, between the acute and chronic stages of the disease. Many individuals die during the height of the disease when the acute reaction is well evident in the kidney. Otherwise death does not overtake them, save through intercurrent accident, until the late sequelæ bring about these changes in the heart, kidneys, or arteries, which have been so thoroughly observed and studied. The intermediate stages of repair are infrequently seen. Nevertheless, one may observe combinations of the acute and chronic lesions in those cases where the disease has been of a recurrent nature. This is not so uncommon, and we have observed a number of instances where perivascular fibrosis was accompanied by an acute lymphocytic infiltration. The acute lesions of the heart were a further evidence that the inflammatory infiltration was a recurrent one and not that of a progressive disease.

The healing of the acute inflammatory exudate takes place by a fibrosis which is observed in radiating streaks advancing from the base of the pyramids through the cortex. The small arterioles which ramify from the interlobular vessels carry with them an

excess of connective tissue. This fibrosis develops through the increase of connective tissue around the small vessels and becomes attached to the fibrous capsule of the organ. The radiating character of this fibrosis is quite distinct. Only secondarily does it involve the tubules and glomeruli which lie in its path in the cortex. The structures intervening between these lines of fibrosis are uninvolved in the cirrhotic change so that many glomeruli throughout the cortex have normal characters and the tubules lying outside of the zone of fibrosis are unchanged. With the shrinkage which accompanies all forms of inflammatory fibrosis, the involved areas tend to narrow the cortex by drawing the surface closer to the outer border of the medulla. The unequal distribution of the fibrous tissue leads to an irregular amount of contraction producing a very granular kidney. Naturally the amount of shrinkage is dependent upon the state of the disease as well as the intensity of the primary inflammatory process. This final stage is known to us as the granular kidney, the genuine contracted kidney, or true chronic interstitial nephritis.

In our discussion we have suggested a bacterial irritant underlying the inflammatory reactions in each of the involved organs. The same organism appears capable of producing inflammatory lesions simultaneously in many tissues and owes its distribution to the blood stream.

In recent years much has been done to indicate the importance of definite streptococcal infections in the inflammatory lesions of the heart and circulatory organs. Although all are not agreed upon the particular type of organism which is mainly at fault, yet it is important that various observers have had their attention attracted to an organism or group of organisms which induce a sub-infection, having more severe focal processes in one or other organ. Though we believe that these focal depositions of bacterial infection may involve many different organs and bring about various grades of inflammatory reaction, our chief attention has centred about the infective heart disease. Nevertheless, the arteries, meninges, kidneys, joints, and liver have been shown to be variously involved in different cases. A study of the organisms associated with such lesions has called forth a nomenclature greatly confusing the subject.

The important bacteria belong to the group of streptococci, and may be recognized by their biological characters and separated from the pus-producing streptococcus, as well as from the pneumococcus. By Schottmuller this variety of streptococcus was

named the streptococcus viridans. In the further investigations it was shown that streptococcus viridans represented a group of organisms which, although having some common characteristics separating them from other members of the streptococcus group, had further points of differentiation which divided the group into a number of types, whose characteristics were fixed and whose habitat was more or less defined. To this group belong the streptococcus fecalis, streptococcus salivarius, streptococcus equinus, streptococcus mitis, and several unnamed forms. The group in itself is quite distinct and by proper means can be readily recognized.

The organisms which have been isolated by different observers from acute and subacute endocarditis belong to the streptococcus viridans group as described by Schottmuller. Such organisms as were described by Poynton and Paine as the streptococcus rheumaticus, the endocarditis coccus of Libman, and the organisms described by Rosenow must be considered as members of this group. It has been pointed out by Gordon and others, including my colleague, Dr. Holman, that the organisms found in connexion with heart lesions do not represent an individual type or a specific variety, but recognizing that they belong to the streptococcus viridans group, they may be represented in a variety of types. Of five organisms obtained from different cases of heart disease, three were shown by Gordon to simulate the streptococcus mitis, while two had characters similar to streptococcus salivarius. Dr. Holman has likewise demonstrated the type of streptococcus salivarius in the blood of patients with vegetative endocarditis, while in three other instances he isolated a form simulating the streptococcus fecalis and in another the streptococcus equinus. Andrewes and Horder in an extensive study upon streptococci found the presence of the streptococcus viridans in fifteen out of twenty-three cases of malignant endocarditis. Of these, eleven belong to the group of streptococcus salivarius; and four to streptococcus fecalis.

In five of our cases having acute non-suppurative processes in the heart, arteries, and kidneys, there was isolated a type of the streptococcus viridans from the blood at autopsy.

The association of these organisms with the occurrence of inflammatory processes in each of the three organs under discussion, led us to test our results upon animals. Through the kindness of Dr. Holman, I had the opportunity of obtaining a number of types of the streptococcus viridans for the tests. Rabbits were used, and living cultures in different amounts were inoculated intravenously. Nine cultures giving the reaction of the streptococcus fecalis,

seven streptococcus mitis, four streptococcus salivarius, one streptococcus equinus, and four other unnamed types of the streptococcus viridans were used. None of these inoculations gave rise to pus formation (one recently isolated strain of streptococcus salivarius was found to be highly virulent for rabbits, death being produced in forty-eight to seventy-two hours). The inoculated animals were killed at different intervals, and the lesions were studied both macroscopically and microscopically. In the majority of instances only one inoculation was given.

In brief, we were able to demonstrate pathological processes in the majority of animals surviving beyond the fourth day. The variation in the pathogenicity was quite evident even among the organisms of the same strain. Some of the older cultures proved to be of low pathogenicity so that, although a slight non-suppurative reaction appeared at the end of the first week, complete resolution occurred within a month. On the other hand, the more virulent forms showed quite intense reactions by the end of the first week which persisted for varying periods of time up to six weeks. When, however, the inoculations were repeated at intervals of three weeks, a progressive inflammation with productive fibrosis was observed over a period of seven months.

In our experiments we were unable to indicate definitely the type of organism which appeared to give the greatest tissue reaction. The variation in the length of time in which the different organisms had been cultivated on artificial media had greatly altered their pathogenic qualities.

The particular point, however, in which we were interested was the simultaneous occurrence of lesions in the heart, arteries, and kidney. The affection of the heart was mainly to be observed in the myocarditis which simulated that described for the human heart. An interstitial infiltration of lymphocytes and plasma cells was the usual observation, and this infiltration was mainly in the vicinity of the small arteries. We failed to demonstrate the uniform periarteritis and mesarteritis of the ascending aorta, as we have on a previous occasion indicated for the human vessel. In two instances a slight grade of periaortitis was present. Otherwise, however, we found an irregular and inconstant periarteritis of the arteries of the liver, diaphragm, mesentery, and kidney. In the latter organ upon which our attention was concentrated, some remarkable results were obtained.

The kidney lesions were common and occurred in greater frequency and intensity than in the heart. They were associated

with the vascular system of the organ. The larger vessels were the least involved, but the interlobular vessels and the afferent vessels of the glomeruli showed an inflammatory attack of a considerable degree. The nature of distribution of these vessels led to a radiating character of the inflammatory process, extending from the intermediate zone to the capsule. The picture was identical with that described in the spontaneous lesions in man. Moreover, all gradations from the acute process to the chronic fibrosis could be followed. A mild grade of granular kidney was produced. In three instances in which the disease had lasted over four months there appeared slight hypertrophy of the heart.

For the present I need not go into the further details of these experiments, save to indicate that the lesions produced experimentally closely resembled those which we meet with clinically. The important finding of the correlation of the heart and kidney in the inflammatory reactions, is worthy of comment to indicate how a general bacterial process may underly a pathological condition arising in each, and before either of these organs has an effect upon the other through its functional incapacity. The cardiac degeneration occurs during the early and acute stages of the disease. The repair with its accompanying fibrosis is prone to have hypertrophy develop with it. So too, the kidney lesion is individual, developing from a bacterial irritant inducing fibrosis about its blood vessels. A vicious circle may, no doubt, develop in the course of the disease which may react on other vital organs. The peculiarity of the infection in being distributed by the small arterioles and having its main action upon the tissue in the vicinity of these, is worthy of our notice. This finding is but a substantiation of the observations of Gull and Sutton. It appears, therefore, that the heart and kidneys bear to each other a relation during this infection only in proportion to the nature and distribution of the inflammation about their vascular system.

I would not have you believe that the arterial affection as an arteriosclerosis is the predominant one, but the organic changes are dependent upon the distribution and the extent of the perivascular inflammatory attack. Moreover, I further wish to indicate that the interdependence of the lesions of the heart and kidneys is through their circulatory system, but not because of an arteriosclerosis as we ordinarily understand it.

Thus our "triple alliance" is complete. Each of the three organs has its individual duty to perform, which has an important bearing upon the health of the other. Common enemies (bacteria)

attack them simultaneously, leaving one, or another, or all, badly abused. Repair of the injuries results in fibrosis which may manifest itself in the "senile syndrome."

The hypertrophy of the heart has its beginning in a process of repair of the heart muscle damaged by bacterial invasion. Subsequent factors, such as increase of the blood pressure and the effect of retained excretory products, probably assist in increasing the cardiac hypertrophy in the later stages of the disease.

The typical arterial lesions under discussion are not what is ordinarily classified as an arteriosclerosis, but consist mainly in a periarterial reaction. Just what relation there may be between the periarterial inflammation of this type and modular intimal arteriosclerosis, we are at present unable to say. However, this is evident from our observations, that the periarterial inflammation following the vasa vasorum precedes the reaction in the intima. The late manifestations of the arterial involvement are observed in a perivascular fibrosis.

The kidney lesions are of the nature of a true non-suppurative interstitial inflammation which begins in the perivascular tissues. The inflammatory reaction follows the distribution of the arterial supply, involving also the glomeruli to a greater or less degree. The chronic stage follows with repair by fibrous tissue, and subsequent contraction of the organ leads to the small granular kidney. Tubular changes are not great and are secondary.

CONCERNING THE IMMUNITIES OF TOLERANCE

A PRELIMINARY COMMUNICATION

BY JOHN L. TODD AND J. G. ADAMI

THE purpose of this paper is to express a hypothesis concerning certain forms of immunity, to invite criticisms of it from you, and to review the facts, for the most part of common knowledge, upon which the hypothesis is based.

Natives of the tropics, and Europeans who have "become acclimatized" by long residence in the tropics, are often broadly said to be immune to certain tropical diseases, such as yellow fever and malaria. But a very short residence in the tropics is enough to make it obvious to any physician that natives and acclimatized Europeans may suffer from the diseases to which they were said to be immune. As a rule, however, the disease in them is much less serious than it would be in a new-comer. Symptoms, both objective and subjective, may be entirely uncharacteristic and, indeed, imperceptible in them although parasites capable of producing severe—often fatal—infections when introduced into more susceptible animals or persons, can be found in their blood. Their immunity in such cases is, then, in the nature of a tolerance, and it is not a complete or sterilizing immunity by which the parasite is destroyed. The diseases in which such a tolerance is most striking are those which are transmitted by insects or by other invertebrate hosts. In the tropics insect transmitters of disease are never absent, neither are the sources at which they may become infected with disease. Consequently, it is obvious that those living in the tropics, under ordinary conditions, must be constantly exposed to infection by disease transmitted through the agency of biting insects. In short, residents in the tropics may be free from the symptoms usually caused by infection with certain viruses, although they harbour those viruses; and the method by which the viruses are transmitted makes it certain that every individual is normally inoculated with them many times in a year. Nay, more, if such apparently immune individuals leave the tropics and live for several years in countries where tropical diseases do not exist, they will, on

Read before the Society of American Bacteriologists, Montreal, January 2nd, 1914.

their return to the tropics, suffer severely from disease produced by the parasites of which they were once tolerant.

Two explanations of this state of affairs suggest themselves. The first is that a non-fatal infection, contracted early in life, persists in the individual who remains more or less completely tolerant to it (the extent to which such an infection provides protection against intervening infections by other, perhaps more virulent, strains of the same parasite is a subject for enquiry, as are the causes which induce change in the virulence of a virus); the second is that a comparative tolerance of the parasites, acquired by a first infection, is maintained by frequent reinfections. Therefore, it seems probable that at least some of the "immunity" which may be acquired against the viruses of certain tropical diseases may result, either from a persistent infection or from constant reinfection by the virus concerned.

All that has been said is as true of native and alien animals, and of some of the diseases to which they are subject in the tropics, as it is of men.

Many of the diseases in which the phenomena mentioned were first noticed, and are especially obvious, are ordinarily confined to tropical and subtropical climates. They are caused by protozoan parasites or by viruses of unknown nature. It has been suggested that some, at least, of these unknown, often ultramicroscopic, viruses should also be classified with the protozoa; but the reasons given in support of this suggestion are insufficient. From a clinical standpoint, there is much similarity between the types of immunity that may exist against viruses of varying systematic position. Therefore, immunity against parasites of most diverse position, including bacteria, might be considered here if there were time to do so; they will be considered fully in the extended form of this paper.

Some of the facts, for the most part well-known ones, on which the preceding statements are based, are contained in the following paragraphs. Malaria is considered first and in greatest detail because more is known about it than about most of the diseases with which this paper deals.

Malaria is caused by a protozoon which is transmitted from healthy to infected persons by the bites of a mosquito. In tropical countries, when malaria is endemic and mosquitoes have many opportunities of feeding on infected persons, a considerable percentage of the mosquitoes capable of transmitting malaria are infective. As a result, every native child and every new-comer, who

does not employ modern methods of protecting himself, inevitably contracts malaria. Actual examinations of native children in many parts of the world show that malarial parasites can often be found in every child under ten examined; nevertheless those children may be comparatively healthy and are drawn from a population that maintains itself successfully in its environment. The usual well-being of natives and of the few Europeans who become acclimatized is proof that an immunity may be acquired against parasites which are able to produce acute, even fatal, attacks of malaria in native children and in newly-arrived Europeans. An exceedingly careful search will often reveal the presence of small numbers of parasites in the blood of apparently immune persons. Consequently, the "immunity" which they possess can not be explained by the usual hypothesis, employed in connexion with bacteria, that the causative agent is lying latent, either enclosed in a fibrous capsule, or in some of the sacs of the body—the gall-bladder, for example. But that this immunity is not necessarily a complete immunity, is proved by the occasional occurrence of more or less atypical attacks of malarial fever in such persons. During these attacks malarial parasites are numerous in their blood. It is well-known that persons who have apparently recovered from malaria and who have been resident continuously in countries where malaria does not exist may suffer from a return of the disease after the lapse of a period of so long as two or three years of apparent health. In such cases there has been an infection which persisted unaccompanied by obvious symptoms. The onset of acute symptoms and of the multiplication of parasites may be occasioned by an increased virulence of the parasites, by lessened resistance of the host, or by both of these factors. That lessened resistance on the part of the host may induce exacerbations of the disease, is certain. That strains of parasites—variants or mutants—possessing unusual virulence may be produced from causes dependent upon the parasites alone, seems probable.

These facts make it certain that an immunity, of a certain order, can be acquired against malaria. That the immunity is not a racial nor a permanent one is indicated by the susceptibility to malaria of natives of tropical countries who return to their homes after prolonged residence in places where malaria is not endemic. In short, persons once infected with malarial parasites may remain infected for many years; and those living in tropical climates are constantly exposed to reinfection.

It follows from these facts that those who seem to be immune

to malaria are often really only tolerant of an undeclared infection; concerning the mechanism whereby this tolerance is produced nothing is said. It is suggested that this tolerance is maintained by constant infection which is either persistent or kept up by repeated reinfection. There is, as it were, a constant "vaccination" by the malarial parasite.

Shortness of time makes it impossible to consider other diseases in such detail; but a little reflection will convince that many of them, especially those caused by protozoa and transmitted by the bites of arthropoda, have many points in common with malaria.

The tolerance of infection which may be acquired for many pathogenic babesias and trypanosomes is notorious. Natives of regions where yellow fever is endemic are said to be "immune to yellow fever." It is recognized, however, that the attacks in some cases of yellow fever may be so slight that its nature is not clinically recognizable. Nevertheless, such a case is capable of being the source of infection from which serious, typical cases originate. It is usually accepted that the immunity of natives to yellow fever, is the result of such clinically ill-defined attacks. The persistency of protozoan infections has been emphasized by the discovery of treponemata in the tissues of those suffering from quaternary syphilis. From syphilis also comes support for the idea that persistent infection maintains immunity, since it has been repeatedly shown that syphilitic patients, presumably sterilized of their parasites by salvarsan, may contract a second primary sore when it would be impossible for an untreated, still-infected patient to do so.

The existence of many recognized similarities between the courses of these diseases and of others, concerning which less is known, suggests that the mechanism of the immunity may be similar in all. It is consequently proposed that, for example, the immunity enjoyed by most inhabitants of temperate climates to the exanthemata is due to a constant infection of them by the parasites of the diseases concerned. From what has been said above as well as from our knowledge of what actually occurs in typhoid, tuberculosis, leprosy, and amœbiasis, for example, there should be no difficulty in accepting the concept of apparently healthy, possibly adult, carriers of virulent viruses of the many diseases usually confined, in their declared forms, to childhood in this country, just as declared malaria is usually confined to children in the tropics. Such a concept would explain the origin of sporadic cases for which no certain source of infection can be designated. Many persons in our environment reach adult life without having suffered from

clinically recognizable forms of many of childhood's diseases. But everyone has had days of malaise or of "indefinite febricula;" these ill-defined illnesses may easily be the expressions of attacks which establish an immunity against certain diseases of our surroundings, just as immunity to yellow fever is acquired by children in districts where that disease is endemic. It is conceivable that, in some instances, the appearance in adults of diseases to which immunity is usually acquired in childhood may be due to the cessation of a protecting infection; just as a second syphilitic infection may be contracted after a sterilizing treatment by salvarsan.

At present, it seems fruitless to conjecture concerning the causes which may lead to increase or diminution in the virulence of parasites, and consequently to alterations in the seriousness and incidence of the diseases caused by them. It is very suggestive in this connexion to remember that the reactions of parasites to drugs may alter; to remember that the assimilative processes of a protozoon may be altered so that a once fatal drug becomes harmless and that morphological as well as physiological changes may be produced in a trypanosome by introducing changes—drugs—in its environment.

Conclusions. The conclusions to which this reasoning leads and on which your discussion is invited are:

1. The apparent immunity which can be acquired against the parasites causing many diseases, is often the result of a tolerance of those parasites, acquired by their host.
2. The tolerance is maintained by a constant infection by the parasite and it disappears when the infection maintaining it ends.
3. A constant infection upon which tolerance depends may conceivably result (a) from a long-continued single infection or (b) from many repeated infections. It is possible that tolerances may be produced in both or either ways.

THERE has been much delay in the construction of the King George Hospital for infectious diseases at Winnipeg, but at last it is practically completed. The cost has been greater than was estimated; the intention was to spend not more than \$200,000, but over \$300,000 has been spent.

SYMPTOMS AND TREATMENT OF HYPERTHYROIDISM

BY DR. C. C. TATHAM

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AS there seems to be more or less difference of opinion as to what constitutes pathological hyperthyroidism as distinguished from or taken in conjunction with the disease called by the various names of Graves' disease, Basedow's, or the more common name of exophthalmic goitre, it will not be out of place to discuss this phase of the subject briefly. While one of the cardinal symptoms of exophthalmic goitre is exophthalmos, this, although a very important symptom of hyperthyroidism when it occurs, is not a constant symptom, and statistics go to show that it occurs only in about sixty to eighty per cent. of the cases; indeed one frequently sees a very severe case of hyperthyroidism with little or no exophthalmos, and it is a matter of regret that the disease is sometimes unrecognized because of the lack of this symptom.

Again, the terms exophthalmic goitre, Graves' disease, or Basedow's disease, are associated in the minds of many with a very distinct enlargement of the thyroid gland. It is not necessary for a patient to have a distinct external protrusion of the thyroid in order to have the symptom of hyperthyroidism markedly developed. While there is no definite rule as to the amount of the enlargement, the middle and one lateral lobe (very often the right) are distinctly enlarged with the other lateral lobe but slightly; also there may be a marked difference in the size of the thyroid gland from week to week.

It is important to distinguish true hyperthyroidism from relative or compensatory hyperthyroidism, which is only temporary, and may be physiological, such as occurs in menstruation, pregnancy, puberty, and the acute infections, etc.; also from those cases which belong entirely to the sympathetic nervous system, and in which the enlargement is compensatory and the symptoms not constant. These cases are characterized by goitre and extreme nervous irritability without noticeably constant hyperthyroidism. Under exertion or excitement the thyroid enlarges from evident congestion, and is doing normal work, but the chromaffin group of glands are at

fault, consequently the thyroid appears to be acting morbidly. Dr John Rogers¹ says that "in these cases the primary disturbances should be regarded as a fatigue of the thyroid, which is really secondary to the nervous irritability, and is due to some error in nutrition in the nervous or chromaffin system." These cases are often very puzzling, and must be distinguished from *hypo*-thyroidism.

The over-active thyroid has been recognized, and more or less investigated for the last one hundred and twenty-five years by such men as Morgagni, Parry and Flagani; then Graves in 1835, Basedow in 1858; later by Hirsch and Moebius, and more recently by Kocher, Klose, Plummer, Garre, the Mayos, Rogers, and Beebe, etc. With the earlier investigators the symptomatology varied between the heart, the nervous system and intestinal toxins, and it was not until twenty-seven years ago that Moebius first presented his theories of hyperthyroidism. Since this time investigators have made rapid progress. But, while rapid progress has been made, still there are various points to be cleared up in the pathology of the disease. Such, for instance, as the relation of the thymus gland to hyperthyroidism. Garre² believes that there is a class of patients suffering from this disease which must be separated from the remainder, owing to the combination of a persistent thymus with the usual goitre, and which is recognizable by the exceptional severity of their symptoms.

Coming now to the symptoms proper, we find that tachycardia is probably the most constant of all, and the pulse rate may be anywhere from eighty to one hundred, up to one hundred and sixty or over, depending upon the severity of the disease. The blood pressure is usually raised, and in some cases markedly so. A bruit is usually heard over one or the other of the poles of the gland, usually the lower. The enlargement may be slight, as in the soft vascular pulsating forms, or it may be extensive as in the adenomatous form with hyperplasia.

In outlining the gland it is always best to put the patient's neck on the stretch, and have the patient swallow while palpating, as well as turn the head from side to side, as much of the gland may be hidden beneath the sterno-mastoid, or the clavicles. Ochsner³ says that "a positive diagnosis can always be made if in the presence of tachycardia there is even the slightest degree of exophthalmos, or enlargement of the thyroid gland." Of the many other important symptoms there are present, muscular tremor (apparent when patient is asked to extend hand or arm), muscular weakness, always found in advanced cases, and sometimes quite

early; nervous excitability, which may take various forms, in the early stages the patient often being very moody, sometimes joyous, but very often depressed. In the latter stages, the patient's nervous condition is one very often bordering on insanity. The nervous system is especially prone to attack by this disease, and in some cases quite a marked mental deficiency develops.

Vertigo is occasionally present. Dyspnoea may be present and may be either paroxysmal in character from pressure on the trachea, or from oedema of the lungs in the later stages. We may have intermittent vomiting, diarrhoea, etc., the abdominal symptoms in some cases predominating.

In the case of a patient aged thirty-five, the abdomen remained markedly distended, was very tender on pressure, and the menses after being irregular for six months, ceased altogether for a period of six months. In this case the temperature ranged between 97° and $100\frac{1}{2}^{\circ}$. The diagnosis had been previously made of "walking typhoid," and later of appendicitis. The menses did not become regular, or the symptoms clear up until after partial thyroidectomy. The patient complained of great thirst and dryness of the mouth, and had a heavily coated tongue. She had no glycosuria. There was a markedly brownish discolouration of the body with deeper pigmentation about the nipples and orifices. The menstrual function is nearly always interfered with in advanced cases. Another patient had irregular menses with dysmenorrhoea, with fits of almost maniacal excitement at the menstrual period. The flow was scant. This altogether cleared up after operation.

Psychic excitation, physical and mental fatigue, tend to increase the gravity of the symptoms. In advanced cases we see great emaciation together with anæmia, and frequently oedema of the eyelids, and later of the feet.

The administration of thyroid extract, or iodine, has a very harmful effect on these patients.

The eye symptoms vary, and while important, there is no one symptom that is constant. The most important when it occurs, is of course, exophthalmos. Various explanations are offered for this symptom, such as a weakness of the muscles supplying the eye—a result of the thyrotoxicosis. Some suggest that a venous enlargement helps to push the eye-ball forward. We know, of course, that in marked cases there is an increase of retrobulbar fat.

Very frequently, even in relatively mild cases, we have: (1) Graefe's sign (1864), in which, in directing the eye downward, the lower margin of the upper eyelid does not follow the line of vision

normally, but lags behind or follows in an irregular or spastic manner. (2) Stellwag's sign (1869), in which there is a retraction of the upper eyelid, and at the same time the lid remains much more stationary than it does under normal conditions, and there is also a marked decrease in the frequency of winking. (3) Moebius' sign (1895), in which there is an insufficiency of convergence. It can be elicited by directing the patient to look at the ceiling and then suddenly at her own nose, when it will be found that only one eye will be directed toward the nose, and the other may take any other direction, although it usually maintains its axis fairly parallel with the eye that is directed toward the nose. (4) Dalrymple's sign, a widening of the palpebral fissure, showing more sclera.

The blood picture is of great interest. Kocher, of Berne, states that leucopenia exists in this class of patients with a relative increase in the mononuclear cells, and further that the processes of assimilation are markedly diminished. In early cases and those that have improved on early treatment, there is usually no increase of lymphocytes. The polymorphonuclear leucocytes are diminished while the total number of leucocytes is usually normal or slightly below.

In considering the treatment of these cases there are many factors to be taken into consideration, for while we know that a patient seldom dies from hyperthyroidism, we also know that patients very frequently die from the effects produced on the vital organs, such as the heart, kidneys, liver, etc., by the continued action of the poison. This action is usually extended over a lengthy period, but as C. H. Mayo⁵ well says, "there are numerous instances where cases of hyperthyroidism have run a rapid course to death, which were essentially due to toxæmia." We must also be cognizant of the fact that there may be many remissions and exacerbations of the disease. MacCarty, from a study of this question, has advanced the "revision theory" that "there is a tendency in the gland of hyperthyroidism to revert toward the simple form of goitre at some period of the disease in practically all cases which are not progressive, and also that such reversions may occur at any period or stage of the disease."

Most of the severe cases of hyperthyroidism give a history in which recurring spells of exacerbation of symptoms are well marked. Further, we often find an enlargement of the liver and spleen in advanced cases. It is now the general consensus of opinion among men of large experience with this disease, that the treatment for true hyperthyroidism is surgical. By this I do not mean to say

that in cases far advanced, in which the musculature of the heart is damaged beyond repair, or the other essential organs irreparably damaged, that surgery will cure. We can remove the cause, but we cannot remove disastrous effects already produced. I would therefore advocate early recognition with partial thyroidectomy. If the patient refuses operation, or is in a too far advanced stage, we may have recourse to Rogers' and Beebe's, or Moebius' serum, with absolute rest both physically and mentally, and the exhibition of proper, suitable, internal, dietetic, and hygienic treatment, with later, if possible, ligation of one or more poles of the gland.

In this connexion I may mention that I have not seen any marked results from Forscheimer's quinine hydrobromide treatment in cases of true hyperthyroidism.

Before proceeding to operation it is advisable, as far as may be possible, and for the best results, to have these patients brought to the ideal surgical state, the state designated by Dr. Geo. W. Crile,⁷ of Cleveland, as "anoci-association." We must endeavour to banish all fear from the minds of our patients, and we may frequently accomplish this by giving our patient bright, cheerful surroundings, with a tactful nurse, and in some cases by daily use of the anæsthetic mask, suggesting to the patient that this is a part of the treatment, and by keeping knowledge of the operation from the patient, finally anæsthetizing the patient in her bed preparatory to the operation. It is most important for the best results, to recognize all the "factors of safety" in the treatment of this disease, and we should use small preliminary doses of morphine and scopolamine, better in some cases morphine and atropine. We may further protect the brain by, if necessary, using Crile's "anoci-preparation," *i.e.*, the local or intra-neural infiltration of novocaine. Crile also claims that "nitrous oxide" is much safer than ether.

If in an advanced stage we find it necessary, or advisable, to ligate one or more poles of the gland, either as a preliminary step or as a final remedial measure, it may be done under local or general anæsthesia, and in doing this it is better to include in the ligature a small part of the gland. This operation should not be undertaken without due consideration, however, for while there is less shock produced than in a partial thyroidectomy, in unsuitable cases it is a severe operation. Partial thyroidectomy is the operation of choice in suitable cases, but here the question naturally arises, how much should we remove? If we remove all we can find we may expect the condition of hypothyroidism to develop. If we remove only a part we may not relieve. In this event we can at a later stage re-

move more if necessary. What we aim at, is to remove all of that part showing hyperplasia, leaving behind sufficient of the normal gland to supply the bodily requirements.

In performing the operation of partial thyroidectomy, I prefer the technique of Wathen,⁹ of Louisville, in which the use of the scissors replaces the knife, and all the structures beginning with the skin, and later, the thyroid, are elevated, put on the stretch, and approached from the under surface. This lessens the hæmorrhage, makes the work more rapid and safer, and allows of easier blunt dissections being made, and, most important of all, allows of less handling of the gland, with its consequent effect of expressing a large amount of the toxin into the system at the operation. It may or may not be necessary to cut through, with subsequent suture, the ribbon muscles to secure an easier access to the glands. The further important points are: to prevent shock; hæmorrhage; injury to the recurrent laryngeal nerve; interference with, or removal of the parathyroid glands; collapse of the trachea; infection, and air embolism; and to provide for drainage through a tube for twenty-four hours or longer, through a separate opening below the line of incision. It is almost unnecessary to add that the work should be done under light anæsthesia, and as rapidly as possible commensurate with safety. In the after-treatment patients should be warned to lead quiet lives for at least a year following the operation, for they usually feel so much better in about two weeks, that they may go to extremes unless warned. The pigmentations and discolouration of the skin are usually much more marked for a few days after operation, and in the course of a week or two clear up almost completely. For twenty-four or twenty-eight hours following operation the pulse rate is usually markedly accelerated and patients should be carefully watched.

In conclusion let me refer very briefly to the ultimate results that may be looked for.

C. H. Mayo⁶ reports 75 per cent. of cures in patients he has been able to trace after surgical treatment with an operative mortality of from 1 to 4 per cent., and reports within the last year two hundred and seventy-eight consecutive cases without a death.

Dr. Theodore Kocher⁷ reports a mortality of 3 per cent. in a series of five hundred and thirty-five patients, and concludes "that the disease should be surgically treated, and operative intervention should be undertaken at the earliest possible moment."

Kocher, Sr., reports that there is not a single case in which the patient has not been much benefited. In 83 per cent. of his cases

a cure is reported; 73 per cent. of cases with primary disease were cured, and 92 per cent. of cases with disease combined with ordinary goitre were cured; 100 per cent. of cases of vascular goitre were cured.

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FOLLOWING the recent exposure in Chicago of quack doctors, who exist there, as elsewhere, only by virtue of the use of the newspapers, the city council has passed an ordinance intended to prevent false and misleading advertising in Chicago. It follows closely the Printers' Ink Bill, which, with modifications, has already been enacted into law in sixteen states. The statute not only reaches the quack who depends on newspaper advertising for the prosperity of his swindling operations, but is also sufficiently broad to cover other fraudulent advertising, in particular, advertisements of fake auctions, fire sales, bankrupt sales, etc. It forbids the publication of any "advertising which contains assertion, representation, or statement which is untrue, deceptive, or misleading." —*Journal of the American Medical Association*, January 10th, 1914.

SMALLPOX AND CHICKEN-POX

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THE spread of smallpox depends in part on wrong diagnoses; in part on concealment of cases; in part on the failure to report known or suspected cases; but chiefly on the neglect of vaccination. Mild cases often are confused with chicken-pox and, in general, many may not be seen by a physician unless a severe case calls for a general "round up," while many are never seen by physicians at all. Hence many alleged chicken-pox cases are smallpox and some alleged smallpox is really chicken-pox. The occasional failure to distinguish between mild smallpox and chicken-pox is due less to lack of information concerning smallpox than to unfamiliarity with, or disregard of, chicken-pox. The physician who has the chance to see either smallpox or chicken-pox should not fail to study minutely the lesions of the cases he encounters in correlation with the age of the lesions, especially during the acute stages.

Smallpox of the now prevailing type is regarded as a very trivial disease, because its physical injuriousness is far less than that of whooping-cough or measles; but from the standpoint of the future, its importance is enormous. Its existence means a large contempt for the disease, coupled with much disregard of vaccination.

The following figures* summarize the experience of Prague during twenty-one years with a severe type of smallpox; they need no comment:—Unvaccinated persons, 90,130; cases in unvaccinated persons, 7,642; deaths in unvaccinated, 2,224. Vaccinated persons, 3,005,578; cases in vaccinated persons, 8,178; deaths in vaccinated, 423.

Each 10,000 vaccinated persons yielded 27 cases and 1.4 deaths.

Each 10,000 unvaccinated persons yielded 830 cases and 247 deaths.

* Welch and Schamberg, "Acute Contagious Diseases."

The unvaccinated yielded, in proportion, 30 times as many cases and about 180 times as many deaths as did the vaccinated.

Clinical Types of Smallpox

Smallpox (variola) is one disease whatever its degree of severity. According to circumstances (the individual resistance of the particular patient, the individual virulence of the particular germ, and the size, probably also the frequency, of the dose) smallpox may affect different patients with different degrees of severity. Thus arise certain clinical types, with many degrees in each:

(a) Discrete smallpox, i.e., with the individual lesions well separated.

(b) Confluent smallpox, i.e., having the lesions fused together.

Most cases of smallpox show both discrete and confluent lesions. These terms are therefore relative, a discrete case usually showing some confluence and a confluent case usually showing some discrete lesions.

(c) Hemorrhagic smallpox, i.e., accompanied by hemorrhages into the skin. This is the type which is often called "black smallpox." Minor capillary hemorrhages are not infrequent in the severe types of smallpox and are usually unnoticed or disregarded. The term hemorrhagic is therefore also relative. The most striking form of hemorrhagic smallpox is that in which hemorrhages precede the eruption, death occurring promptly. Strictly speaking, these cases are *sine eruptione*, but only because the patient dies before the eruption has time to appear. The term *sine eruptione* is, in practice, restricted to cases in which the eruption fails to appear despite survival beyond the prodromal stage.

(d) Varioloid, i.e., smallpox modified as regards clinical symptoms by vaccination. Such modification occurs, first, when the absolute protection afforded by recent successful vaccination has partially run out, as it is likely to do after five to seven years from the date of vaccination, and secondly, when an unvaccinated person exposed to smallpox is vaccinated during the incubation period. If less than three days have elapsed since exposure, a successful "take" usually prevents an attack of smallpox entirely. If more than three but less than ten days have elapsed since exposure, a light attack (varioid) is likely to supervene. If over ten days have elapsed, vaccination is unlikely to have any marked effect in modifying the subsequent attack.

Vaccination rarely takes in smallpox, if performed after the fever begins, and practically never, if performed after the eruption

appears. Ker states that a take following vaccination made for diagnostic purposes after the third day of the eruption conclusively eliminates smallpox. The proper thing to do is to vaccinate all exposed unvaccinated persons without regard to the time which is alleged to have elapsed since exposure.

(e) Abortive smallpox. A few persons are by nature wholly immune to smallpox. Some persons are by nature partially immune, sufficiently so to prevent the regular course of symptoms, but not sufficiently to protect them absolutely. In such persons, a very light attack with atypical lesions and quick recovery may occur. These cases are described as "abortive." Smallpox modified by artificial immunity (vaccination) is called varioloid; smallpox modified by natural immunity is called abortive.

(f) Smallpox without eruption. This form is probably due to a somewhat greater degree of partial immunity than that which yields the abortive form. The general disturbances, pain, fever, headache, etc., are similar to those of true smallpox, at least in the recognized cases, which are considered very rare. The chances are that abortive and *sine eruptione* varieties of smallpox are really not uncommon in smallpox outbreaks, just as similar forms of scarlet fever, diphtheria, measles, typhoid fever, etc., accompanying outbreaks of the latter diseases, are not uncommon, but these forms are usually unrecognized and therefore considered rare.

(g) Mild smallpox. This is as truly smallpox as are the types above described, and deserves equally a distinctive descriptive term. It presents difficulties in diagnosis only because of its mildness, not on account of any qualitative difference from the more typical strains. It is not varioloid, nor is it hemorrhagic, abortive, or *sine eruptione*. It is usually discrete, occasionally partially confluent.

Mild smallpox is true typical smallpox, but is "scaled down" in severity, in the number of lesions, and in duration. It does not "run to the time schedule" so closely as the more severe forms. The incubation period averages a day or two longer and is slightly more variable. The prodromal stage is often light, although also often severe, and is not usually observed to be as closely limited to two or at most three days as in the more severe forms. The lesions have the same relative distribution,* character and stages as the lesions of the severe type, but the duration of the different stages is apt to be shorter. Pustulation is moderate, light, or

*Provided there are lesions enough to furnish any basis for determining relative distribution.

even not appreciable and is not as a rule accompanied by marked secondary fever; crusting, decrustation, scabbing, etc., are relatively rapid in progress.

Too often the attempt is made to "size up" such a case on general principles and to regard it as not smallpox, merely because the symptoms are mild, the lesions few, and the course short. This policy throws all expert differentiation to the winds, abandons all exercise of professional observation, and adopts the lay attitude: "It is too mild for smallpox, therefore it is chicken-pox." As well might we follow the slogan of thirty years ago with regard to diphtheria: "The cases that die are diphtheria; the others are not."

Differential Diagnosis of Smallpox

The most common differentiation called for is that between smallpox and chicken-pox. As German measles is to measles proper, and Duke's disease to scarlet fever, so is chicken-pox to smallpox—analogueous to it, but wholly distinct from it. Neither protects against the other; neither ever produces the other; each breeds true. Clinically, the distinctions between mild cases of these diseases and their corresponding imitators are often somewhat difficult, to those whose experience is limited. *Both* diseases require intimate study, if reliable results are to be secured. In practice the most important points to consider in differentiating smallpox and chicken-pox are:—

1. History of association with frank cases within the incubation period.
2. Definite history of previous chicken-pox, smallpox, vaccination.
3. Date on which first fever, headache, etc., appeared.
4. Date on which lesions appeared.
5. Location of the first lesions noted.
6. Quantitative distribution of the lesions in relation to the covered and uncovered portions of the body.
7. Character of the individual lesions in correlation with the number of days they have been in existence.

In approaching the diagnosis of a doubtful case, the derivation of the present case from, or its ability to give rise to, a frank case, is extremely important, but such evidence may not be available. It also happens at times that the history concerning vaccination, the existence or character of prodromes or even the exact date of eruption is indefinite or unobtainable. In dealing with mild small-

pox, the history of a previous attack of chicken-pox or smallpox is often not very conclusive, since the previous attack, being subject to similar difficulties in diagnosis, may have been itself wrongly named at the time when it existed. Hence careful study of the distribution and especially of the character of the lesions themselves becomes of the greatest importance.

Differentiation of Lesions

On general survey the smallpox patient shows round lesions only,* not crenated at the margins, uniform in size, and unbroken. They are chiefly on the face and limbs. The chicken-pox patient shows round *and oval* lesions, usually crenated at margins, varying widely in size, and almost always more or less broken or disfigured; they are chiefly on the body.

On close examination the smallpox lesion is found relatively small, round, and, in the papular, vesicular, and pustular stages, very firm. It is deep-seated; the vesicles and pustules are therefore thick-walled, and consequently rupture only with great trauma; thus, very firm pressure and hard rubbing with the ball of the finger scarcely impress the smallpox papule, vesicle, or pustule at all. Of course it is *possible* to break the smallpox vesicle or pustule with the fingernail by firmly digging into the margin of the elevation. When this is done, the thick epithelial wall of the vesicle comes away, maintaining its shape, like the top of a neatly cut egg. In contrast, the chicken-pox vesicle, whatever its size, is like a half-balloon, thin-walled, tense, with clear contents, giving the "pearly" appearance, and is quickly broken down at the lightest touch, the collapsed wall being soft, flimsy, shapeless—a mere rag.

Naturally this differential point can be made use of only if intact vesicles can be found. This is seldom true in chicken-pox, if the eruption is of more than three or four days' standing, because the chicken-pox vesicles are so delicate that they are ruptured by the friction of clothing or other accidents, as well as by scratching. Hence, as a rule, very few or even no distended vesicles can be found in chicken-pox after the first two or three days, the lesions being either completely decapitated, showing merely small raw or crusted pits on the vertex of low, round, or oval elevations, or else pits of the same character, overlain by the macerated, opaque, white, shrivelled, wrinkled, empty, easily brushed off epithelial rag,

*The shapes of confluent lesions depend of course upon the number and position of the round lesions forming the margins of the confluent area.

representing the remnants of the previously distended and then, therefore, thin and transparent walls of the vesicle, now ruptured. The very fact that plentiful unruptured vesicles present themselves for examination is itself presumptive of smallpox, although this condition may be found in chicken-pox at times in the first day or two of the eruption. The presence of plentiful broken-down vesicles is itself strongly presumptive of chicken-pox. I have seen a plentiful crop of chicken-pox vesicles on the back which had been evacuated of their contents wholesale by rubbing the back firmly with oil or vaseline, at the height of the vesicular stage, to relieve itching. The oil or vaseline, rubbed in as the vesicles were emptied and smoothed down, had kept these "epithelial rags" in place and prevented them from drying out. The slippery oil prevented the examining finger from securing a foothold to dislodge the rag; and the vesicles, being already empty, could not be further emptied by pressure. This condition had led to the diagnosis of smallpox, on the ground that the "vesicles" were firm and resisted the efforts to break them down! It must be confessed that at a little distance the smooth, yellowish white caps, lying on the summit of the engorged bases of the vesicles, would have suggested at the first glance smallpox, but for their irregularity in size and shape. On close examination the differentiation was easy.

The reddened areolæ (halo) surrounding the pocks of the two diseases are often similar, but the smallpox areola (until secondary infection late in the disease may alter conditions) is generally narrow, and, since it surrounds a round lesion, is itself circular. The chicken-pox areola is usually wider, the depth of colour diminishes more gradually towards a more diffuse edge, and when the lesions are oval the areola corresponding to them is oval also. Finally the chicken-pox areola frequently, although by no means invariably, shows irregular flaming offshoots, which give the whole the appearance of a bright-red ragged star.

Some prevalent misconceptions concerning the differential diagnosis are:—

1. That chicken-pox occurs only in children. It is true that the vast majority of chicken-pox cases occur at or before twelve years of age, but cases in older children and even in adults are by no means uncommon. I have seen it in a woman of fifty-three; and in many young adults.

2. That smallpox does not invade the scalp. It is true that chicken-pox usually invades the scalp while smallpox sometimes does not, but the point is by no means final.

3. That smallpox alone invades the palms and soles. It is true that smallpox almost always invades the palms or soles, or both, but chicken-pox not infrequently shows one or more palmar or plantar lesions.

4. That smallpox alone presents lesions in the month. Almost every case of chicken-pox shows some mouth lesions.

5. That smallpox lesions are umbilicated (dimpled), while chicken-pox lesions are not. This last statement might be made almost without reservation, if confined strictly to the vesicles of the two diseases. But the umbilication of the smallpox vesicle disappears on pustulation (perhaps by liquefaction of the restraining bands which are supposed to produce the "dimple"), while the subsequent drying out of the pustule reproduces a pseudo-umbilication in the late pustular stage. The chicken-pox vesicle, being swept off or broken, leaves the slightly pitted summit of the papular base of the vesicle exposed. On drying, and especially after crusting, the lesion thus evolved often presents a certain dimple, sometimes mistaken for umbilication. This "umbilication" is wholly different in stage, cause, and structural features from the true umbilication of the smallpox vesicle, and should never be confused with it. It is not even analogous to the secondary umbilication of smallpox, for in the latter the epithelium covering the pustule is still intact, although dry.* Occasionally, one or more chicken-pox vesicles, at an early stage, may show a light dimpling, or even umbilication. A diagnosis should never be based on the condition of one or two lesions, but on the prevalent type. I have seen generalized vaccinia, developing eight days after vaccination, diagnosed by high authority as smallpox, and by other high authority as chicken-pox, both errors depending on attaching too much importance to the peculiar character of one or more lesions, while overlooking the predominant characteristics of the predominant type.

Occasionally chicken-pox vesicles of the forehead and especially of the palms or soles, may be found more deeply seated or having over them a tougher epidermal covering than usual. The only lesson of this fact is, that the lesions of the face, palms, and soles should not be used for the testing of the differential points.

Differential Diagnosis of Severe Smallpox, Mild Smallpox, and Chicken-pox

The case of SMALLPOX will show:—

*It is stated by J. M. Armstrong that smallpox papules under moderate magnification show umbilication also.

1. An incubation period (i.e., from exposure to earliest symptoms—not to eruption) of practically twelve days (in mild smallpox fourteen days). The incubation period can be determined accurately only in cases where known exposure occurs on a given date, with no exposure before or after, the date of earliest symptoms resulting from such exposure being also definitely fixed.

2. No definite history of previous attack of smallpox. When mild smallpox has prevailed for years, often confused with chickenpox, and *vice versa*, this history is of little account, especially when the previous diagnosis was made, as often happens, by the laity. Examination for healed pits should be made. Round pits indicate smallpox; oval pits, clean cut, indicate chickenpox. Confluent smallpox may yield pits of irregular shape. In mild smallpox, and in chickenpox, pits of any kind may be few and small.

3. No history of successful vaccination within five to seven years. Careful examination for vaccination scars should be made.

4. Prodromes, lasting two or, at most, three days, headache, backache, fever, epigastric pain, chills, sudden severe onset. Mild smallpox sometimes presents very indefinite and trivial prodromes. When definite, a history of three or four days or more of prodromes may be offered. (See 5.)

5. First signs of eruptions on third or fourth day of attack. In mild smallpox the earlier eruption, when sparse, is often unnoticed for a day or so, thus prolonging the *observed* interval between onset and eruption.

6. Eruption beginning on face and wrists. In mild smallpox, the lesions are sometimes so few that the earliest ones are overlooked until the full crop has appeared.

7. Eruption most profuse on skin not covered by clothing, i.e., face and wrists; also the legs, despite the covering of the latter. In mild smallpox, with very sparse lesions, there may be too few lesions to permit any real comparison of relative abundance at different points.

8. Palms and soles often attacked. In mild smallpox, one or two lesions in one palm or one sole may be all that can be found in these locations.

9. Eruption develops in one crop, the lesions appearing steadily for twenty-four to forty-eight hours; the face lesions usually further developed than the body lesions. In mild smallpox aborted lesions, i.e., not following out the regular stages, are sometimes found.

10. *Lesions round at all stages.* Margins not crenated. All those of the same stage of development are usually of the same size.

The stages are:—(a) “Flea-bite” macules, each lasting twenty-four hours, exist during the first day of eruption (third day of disease). With the appearance of the eruption, the systemic symptoms improve; but with very mild prodromes, this improvement can hardly be observed. (b) “Shotty” papules (pimples), each lasting twenty-four hours, exist during the second day of the eruption (fourth day of disease). (c) Umbilicated “shotty” vesicles (blisters), each lasting twenty-four to seventy-two hours, exist during the third to fifth day of eruption (fifth to seventh day of disease). (d) Firm opaque pustules, each lasting four to six days, exist during the sixth to twelfth day of eruption (eighth to fourteenth day of disease). With pustulation, the secondary fever begins, but in mild smallpox pustulation is usually very innocuous and little or no secondary fever is observed. (e) Firm crusts appearing about the thirteenth day of eruption (fifteenth day of disease). Secondary or pseudo-umbilication, due to drying, may be found about this time. (f) Dense scabs and deep-seated, tenacious, “mahogany” plaques—the latter still covered with the original epithelial wall of the pustule, now flattened out again—developing as drying out continues. They are variable in duration lasting many days or weeks in severe neglected cases. In mild smallpox the absence of severe pustulation often obviates the formation of the deep-seated tenacious plaques. Those formed are rather superficial and are removable without great difficulty. It is to be noted that as some lesions develop earlier than others it is possible to have, during the first twenty-four to forty-eight hours of the eruption, macules and papules, and even vesicles together; during the next twenty-four to forty-eight hours papules, vesicles, and pustules; thereafter, however, vesicles and pustules alone, later followed by pustules and crusts, will be found; finally, crusts, scabs, and plaques, leaving pits as they disappear. In mild smallpox, aborted lesions sometimes add to the variety of conditions presented.

11. Pitting, especially following marked pustulation, is deep and permanent; the pits are red for months, then white. Unless extended by impetigo, or fused by confluence, the pits are round. Mild smallpox yields few and small pits only, as a rule.

The case of CHICKEN-POX will show:

1. Incubation variable, but from two weeks to seventeen days as a rule (see smallpox 1).

2. No definite history of a previous attack of chicken-pox (see smallpox 2).

3. A history of successful vaccination within five to seven years,

or a definite history of previous smallpox, practically eliminates smallpox, and therefore admits the possibility of a diagnosis of chicken-pox; absence of history of one or other or both of these does not, of course, eliminate chicken-pox.

4. No history of prodromes usually; if any, chiefly in adults, and for not over twelve hours preceding the eruption.

5. First signs of eruption *noticed* in first twenty-four hours of illness, i.e., the systemic disturbance is usually synchronous with or immediately precedes eruption.

6. Eruption beginning on back, chest, or face.

7. Eruption most profuse on skin covered by clothing, i.e., on the body.

8. Palms and soles may sometimes show lesions, less constantly and less abundantly than in smallpox, however.

9. Eruption appearing in successive crops, on successive or alternate days.

10. *Lesions round and oval*, with much variation in diameter, even at the same stages of development; margins often crenated (scalloped). Each crop passes quickly through the following stages:—(a) Macules, each lasting a few hours. (b) Soft, superficial papules (pimples), each lasting a few hours. (c) Clear, thin-walled, tense vesicles (blisters), each lasting a few hours. These are easily destroyed and leave then “cupped” or “pitted” elevations, raw, red, and weeping, but quickly crusted. When the vesicle is ruptured, without total removal of the cap, a white, opaque, shriveled rag of epithelium, lying more or less loosely over the pit, remains. (d) Theoretically, pustules follow. Practically, the vesicles are almost always destroyed before pustulation can occur. But I have seen a vesicle, on the back of a finger, and preserved from rupture by a plaster cast, develop into a tense, thin-walled, oval, half-balloon pustule, nearly a quarter of an inch long. (e) Crusts, lasting a shorter or longer time according to treatment, etc. Each crop completes its cycle in two to four days. In the first week macules, papules, vesicles, intact or broken, and crusts may be found together. Thereafter the earlier forms disappear, and in the second week crusts alone or in great predominance are found. The older lesions are very often complicated by presence of impetigo.

11. The pits are few and superficial, often oval. When extended by severe forms of the impetigo, which so commonly affects chicken-pox lesions during and after the second week, the pits may be irregular in outline.

General Observations

In smallpox the worst systemic disturbance and suffering are often found during the prodromes, and improvement, if only temporary, follows closely on the appearance of the eruption. Severe prodromes may be followed by either mild or severe eruption; mild prodromes, usually by mild eruption. The extent of the eruption on the face is a fair index of the general severity of the attack. In chicken-pox the practical absence of prodromes means that the first appreciable systemic disturbance, if there be any at all, begins with the eruption and continues for a few days thereafter.

In smallpox itching during the early stages of the eruption is not usually a marked symptom; nor does scratching injure the lesions much, on account of their deep-seated and tough-walled character. In chicken-pox itching is highly characteristic, and since the relatively superficial and thin-walled lesions are very fragile, they are easily destroyed, not alone by scratching, but by every form of contact. This feature is in itself of very strong diagnostic import.

In smallpox the thick walls of the pustule permit comparatively little evaporation; the pustule, in shrinking, shrinks into the skin, and a hard, opaque, brown, very tenacious scab is often formed. This is especially true of the lesions of the extremities, particularly of the palms and soles. In chicken-pox the vesicle, if not wiped off or collapsed early, shrinks by evaporation to a brittle, but still somewhat elevated cap, very easily broken off or dislodged. In mild and abortive smallpox and in varioloid similar caps are at times found on the *body*.

*General Differential Diagnosis of Smallpox**

During the invasive stage, and before the appearance of the prodromal rashes, the diagnosis must be made from other infectious diseases having an acute onset, i.e., measles, scarlatina, typhus, influenza, etc. Diagnosis at this stage depends primarily upon the presence of an epidemic, and the history of exposure within the appropriate incubation period. In the case of the diseases indicated below, the following points should also be considered:

SCARLATINA. With rash absent or "missed." Condition of tongue, cervical lymph-glands, tonsils, nose discharges, injection

*Modified from A. E. Thomas, "Public Health," Vol. xx.

of soft palate (enanthem), circumoral pallor, history of vomiting and sore throat. Backache, absent or slight.

MEASLES. Coryza, photophobia, lachrymation, Koplik's spots, backache absent or slight.

TYPHOID FEVER. Although this has not an acute onset, many cases when smallpox is rife are reported as smallpox. Attention should be paid to the gradual rise of temperature at onset, "step ascent" on the chart; early epistaxis or deafness, not common; Widal reaction; tympanites; condition of the tongue; spleen, stools.

INFLUENZA. Here the diagnosis may be impossible until the time interval for the appearance of the rash has passed. The muscular soreness and prostration are both generally much more exalted in influenza than in smallpox. The history of exposure and the presence of an epidemic are of special importance here. The bacillus may sometimes be isolated from the sputum.

MENINGITIS. The history, with the presence of a possible cause, e.g., suppuration of the middle ear or a tuberculous focus in a lung, is important. The subsequent course, with the attending palsies, generally clears up the issue. Backache is uncommon.

CEREBROSPINAL MENINGITIS. Retraction of the head; rigidity of the neck muscles; Kernig's sign; possible presence of the coccus in the nasal discharge or in the fluid obtained by lumbar puncture.

After the appearance of the rash the diagnosis must be made from the following:—in all stages, chicken-pox, acne, syphilis, drug eruptions, glanders, scabies, lupus, especially on the face; in the papular stage, prodromal rash of measles, erythema nodosum, lichen planus; in the vesicular and pustular stages, herpes, erythema iris, and erythema bullosum; in the pustular stage, impetigo and pustular scarlet fever.

"Minnesota Method" of Controlling Smallpox

Much misunderstanding exists as to this method. It is commonly stated that "nothing is done for smallpox, there is no quarantine," etc., all of which is error. Under the regulations, the chief steps taken are:—

1. The patient is isolated in a suitable place, preferably with a vaccinated attendant.

2. All persons exposed to him on and after the date of earliest symptoms, at home, at work, etc., especially school children, are examined.

3. Of those exposed to the patient, all who can *prove* successful vaccination within seven years, or a previous attack of smallpox, may be dismissed. Those remaining must be vaccinated at once, or go into isolation for three weeks.

4. The premises where the smallpox patient is confined must bear a warning placard indicating that smallpox exists there.

5. Persons vaccinated successfully within seven years, those who have had smallpox, and those who, failing either, submit to immediate vaccination, may enter or leave the placarded premises without restriction.

6. Persons not thus protected, may enter the premises, but must then stay there, unless they become vaccinated.

7. In epidemics, teachers and children who have not been vaccinated, and who have not had smallpox must be excluded from school for three weeks.

These methods are so simple, just and efficient, placing the penalties only on those who refuse to be vaccinated, and removing all restrictions from those who submit, that they have been adopted gradually over wide areas in the United States. The carriage of smallpox by "third parties" is rare; vaccinated students are given every opportunity to see smallpox, and thus learn to make the diagnosis. Hundreds of students thus see the disease every year without instances of carrying the disease occurring.

NEXT year it is proposed to add to the Vancouver General Hospital a maternity hospital, an infectious diseases building and administration quarters, at a cost of from \$600,000 to \$700,000. To enable the board to do this, a deputation recently approached the provincial government with the request that a grant of \$250,000 be made. It was pointed out that quite fifty per cent. of the cases treated in the Vancouver Hospital came from outside the city, that more than a million dollars had been expended already on the buildings of the hospital, and that the provincial government had contributed to this amount only thirty-five thousand dollars. The request is under consideration.

Editorial

THE NEW QUACKERY

RADIUM is the philosophers' stone in its newest form, that fabled element, mixture, or solid substance, which should have the property of converting all base things into gold. What the alchemists and necromancers eagerly sought our new philosophers have found. At least, they tell us so; but in their telling we do miss that self-restrained, serene, and rational calm, which is the mark of all philosophers, who are so in reality.

The profession of medicine is very old and very wise and, it may be added, very sceptical. It has too often gone out into the wilderness at the cry, "Lo, here: Lo, there," and found only a reed shaken by the wind. It is now disposed to ask of the philosopher not what he says but what he can prove. The rôle of the gad-fly has never been an attractive one, but that humble creature does puncture many a wind-egg.

Any new half-truth in medicine is quickly seized upon with enthusiastic ignorance to benefit the sick, or with cunning design to impose upon the credulous. All quackery does not lie outside the boundaries of the medical profession; and it is hard to distinguish between credulity, pretence, and charlatanism.

For the moment sera are enjoying a respite. They are finding their own place either in the equipment of the physician or in the limbo of exploded and forgotten fallacies. Their place is now occupied by radium, and reputations of a kind are being erected upon it. The moment is well chosen. The public mind is blinded by the glamour of the emanations which issue from this substance, and no discovery was ever

made which was not instantly seized upon for therapeutic purposes.

The offence has come from within the profession. The medical journals recount much ill-considered opinion and many incomplete investigations in which surmise takes the place of evidence. The lay press has not been slow in taking up the cry, and the daily newspapers now estimate a surgeon in terms of the amount of radium he owns, as the worth of a woman is judged by the number and brilliancy of her diamonds. Religion, too, is pressed into the service. One surgeon of great reputation has declared that radium is that Sun of Righteousness which was to arise with healing in his wings.

All that can be said at the moment is that the emanations from this metal do exercise some effect upon cell activity; but the same is true of the ultra-violet rays, or even of light itself. Already reports of bad omen are coming in, of healthy tissue destroyed, and of connective tissue cells being stimulated into a sarcomatous growth.

Cancer is such a dreadful malady that sufferers will seize with avidity upon any device for its cure or amelioration. The usefulness of radium in cancer is by no means settled. It is still under investigation by competent observers; and the best the inexperienced person can do is possess his soul in patience and wait for results from well authenticated laboratories.

THE SOCIETY OF AMERICAN BACTERIOLOGISTS

THE recent stoppage of the water supply of Montreal resulted in the attendance at the meeting of the Society of American Bacteriologists being reduced to about half of what was expected. This did not prevent the meeting being one of great interest.

The society differs from the Association of Pathologists and Bacteriologists in that it brings together workers in all branches of bacteriology, what we may term medical bacterio-

logy forming but one section of its activities. Its main service lies in bringing together workers in the bacteriology of water and milk, agricultural bacteriologists and public health workers.

Professor Winslow, this year's president, who gave a most admirable address upon the moot question of species and varieties of bacteria, may be taken as the type of members of the society. He is the director, and indeed the instigator, of a most useful section of the activities of the National Museum of Natural History in New York; a section devoted to the collection and preservation of all cultivable varieties of bacteria. To this any worker can send new varieties isolated by him, from it he can obtain for study series of closely allied forms. This department has already done much to aid in establishing and placing bacteriology on this continent on an excellent footing.

The meetings of the society were held at McGill University on December 31st and January 2nd. On New Year's Day the sessions were held at Macdonald College where Principal Harrison, himself a foremost bacteriologist, entertained the members.

The public interest in the meeting settled mainly around the communication by Dr. N. S. Ferry, of Detroit, who has been widely announced in the press as heralding the discovery of the microörganism of scarlet fever. In this case we feel it our duty to our readers to point out that Dr. Ferry made no such announcement. He described a coccus which he found frequently in the throats of scarlet fever patients somewhat similar to an organism announced a few years ago by Dr. Claus, but at the same time he admitted that he had been unable to reproduce the disease by inoculation of a pure culture of this organism, and that until it was possible to reproduce the disease it would be absurd to speak of this as the specific organism. At most he recorded one striking observation, namely, that whereas nurses at the Detroit Contagious Diseases Hospital had previously been liable to

catch the disease from the patients, since he had started to vaccinate them with pure cultures of this organism, during two years or more there had not been a single case of the disease in the nursing staff, until through his absence for a few months, the supply of the vaccine had ceased, when some of the nurses who had not been vaccinated came down with scarlet fever. These are interesting observations, but certainly they do not prove that the organism in question is the specific cause of the disease.

RECIPROCITY

IN a recent address on "Examinations, Examiners, and Examinees" (*Lancet*, October 11th, 1913) Sir William Osler pointed out the failure of our present "Chinese" system of education, in which the passing of examinations is often the chief aim of the student, and pleaded earnestly for a change. After outlining a plan, as a measure of relief, whereby the daily work of the student can be made to count largely in the final estimate of his fitness, he writes as follows:—"And the system is being adopted. A few months ago I went into the beautiful clinical and pathological laboratory of the new Toronto General Hospital, and in one room I found an examination in pathology going on. The candidate had a set of cards in his hands, on each of which were written the details of the post-mortem examination he had made with a careful discussion of the case. Pass or pluck really depended on the cards a man held. He brought his marks with him—instruction and examination had gone hand in hand. I was delighted to hear from Professor MacKenzie that the system, introduced at McGill by my pupil and successor, the late much lamented Wyatt Johnston, had proved very successful in both Canadian schools." At Toronto and McGill the final examinations are being reduced in number and importance, while less formal tests are held throughout the year. At the end of the first year, for example, there are only three

written examinations, in physics, chemistry, and biology, the latter including questions on botany, anatomy, histology, and bacteriology. The plan is gradually being applied to the other years.

Since 1908 committees of the medical faculties of the two universities have met in annual conference to discuss the curriculum. While it was recognized that it was neither practical nor desirable to make the curricula identical, the length and order of the courses have been so correlated, and such uniformity has been introduced into the general requirements and into the methods of teaching and examining, that it is now possible for the student to change over from one school to the same grade in the other with the minimum of formality and without loss of time. Not many students have so far made use of this privilege, but it is a practice that might well be encouraged. The facilities at both schools are now so excellent, and so evenly balanced, that neither need fear that the migration would be in one direction. In Germany it has been a common custom for the undergraduate to study at more than one university. No doubt it must result in a broader outlook, and it should be a salutary corrective of provincialism.

Another result of these conferences is that the regulations at both schools have been made more strict. No student is allowed to register until matriculation is completed, and each year's work must be satisfactorily accomplished before that of the next can be begun. When supplemental examinations are allowed, the student must work for them during the summer under an approved tutor. One of the most difficult questions under discussion has been the teaching of physics and chemistry, which at present crowd the first years of the curriculum. A joint committee has made recommendations for the improvement of the teaching of these subjects in the high schools, for though it is now adequate in many of the Ontario schools, it is generally unsatisfactory elsewhere. It has also been suggested that the only way to meet the difficulty

is to require a preliminary year in arts or lengthen the medical course to six years.

At a recent conference it was decided to try the experiment of having extra-mural co-examiners. Accordingly, this year two McGill professors will assist in the examinations in their subjects at Toronto, and *vice versa*. Owing to the death of Professor Alcock the chair of physiology at McGill is at present vacant, and it is typical of the friendly relations, the admirable spirit of reciprocity, existing between the two leading schools, that Professor Brodie, of Toronto, has offered to give a course of lectures at McGill this session. The offer, needless to say, has been gladly accepted.

THE LARYNGOLOGISTS

THE teaching of the specialties and the training of the specialist are questions which are much to the fore. An interesting report has been issued by a committee which was appointed by the American Laryngological, Rhinological and Otological Society to consider the best methods to be followed in the teaching of oto-laryngology in undergraduate and post-graduate schools. The committee consisted of three well-known specialists, including Dr. C. J. Gibb Wishart, of Toronto. In the case of the undergraduate the report recommends that he should be familiar with the anatomy of the parts, possess a practical working knowledge of the simpler instruments of examination, be able to recognize familiarly the normal appearance of the structures, be practically acquainted with the pictures presented by the commoner diseases of the organs involved and with their treatment. He should further be instructed to recognize the symptoms of serious complications, the wisdom of early associating the greater knowledge of the specialist in the care of his patient, and the dangers associated with all operations upon the parts involved, except in the hands of the competently trained specialist. The instruction should be given to small groups of students,

and should occupy at least forty hours of the student's time in each of the two final years. The clinical teaching should exceed the didactic in the proportion of at least three to one. Operations should not be included in such a course. A separate examination, preferably clinical, in oto-laryngology should form part of the final examination in medicine of all universities and licensing bodies.

The second half of the report deals with post-graduate work, and the committee is agreed that the time has arrived to standardize the degree of scientific attainment and of clinical training, which shall qualify those who wish to begin the practice of oto-laryngology as a specialty. The minimum requirements are outlined, and call for at least two years of special training, preceded by not less than two years of general practice or of mixed service in a general hospital. The special training should include six months of advanced scientific studies at a recognized university capable of providing the necessary facilities, and this should be followed by eighteen months of service as resident assistant in a special hospital or in the oto-laryngological service of a large general hospital. At the end of his training the candidate should be examined by the university, and if approved, should be given a higher degree, that of Ph.D. in oto-laryngology being suggested. A special committee of the society has been appointed to work out the details of his scheme. The success of a plan such as this, like that of the recently constituted American College of Surgeons, must depend upon an enlightened public opinion in the laity. Any serious attempt to prevent the exploitation of the public by ill-trained, self-styled specialists, ought to receive the hearty support of the profession.

THE next annual meeting of the Ontario Medical Association will be held in Toronto, on May 26th, 27th, 28th, 1914. The programme will be largely clinical.

IN conjunction with the annual meeting of the Ontario Provincial Board of Health, a meeting of the district officers of health was held December 23rd. The work done in the seven districts, into which the province was divided last year, has been productive of good results and by means of the sanitary surveys, in particular, a great deal of useful information has been acquired. An important feature of the meeting was a discussion concerning possible amendments to the public health act.

WITH the death of Weir Mitchell one of the most notable figures in American medicine has passed away. In the later years of his life Dr. Mitchell attained to so great a celebrity in the world of letters that his fame as a physician was overshadowed. He was a very great physician, and established a tradition which he acquired from his father and handed down to his son. His practice was based upon research at a time when the empirical method held full sway, and he had the rare quality of combining in himself the attributes of the scientist and the practitioner. To writers he was a writer, and to physicians, a physician. He has now a place beside Holmes in the public mind; and in the course of human events one other name will be added to the short but impressive list, namely, that of Sir William Osler. These three will constitute a trinity which any profession and any country might well contemplate with satisfaction.

A HOSPITAL, whose aims are charitable, is not precisely in the same category as a joint stock corporation whose aims are mercenary. In a company it is quite proper that a man's control shall be proportionate to his holdings, since the shareholders own the property and pay the staff and employees. But the donors to a hospital do not own it. A gift does not imply the acquisition of proprietary rights. Nor do they pay the staff, much less own it. On the contrary, it is the staff which creates the hospital. The common experience is that hospitals do best when the relations between the staff

and the donors are nicely balanced, and the question of control is left in abeyance. This old problem has come to the front in Toronto over the management of the Western Hospital. A Bill to revise the Act will come before the legislature, and it contains a provision that donors shall be entitled to a vote for every hundred dollars they subscribe. This would inevitably throw the control into few hands, and no surer plan could be devised for drying up the sources of charity.

THAT hospitals are responsible for the conduct of the physicians and nurses employed is the effect of a judgement handed down by Mr. Justice Macdonald in Vancouver, in the case of *Thompson v. Columbia Coast Mission*. This interesting case is reported in the *Victoria Times* of January 8th. Thompson secured a judgement against the Columbia Coast Mission and Dr. Stuart Tidey, the superintendent, and the jury awarded him the sum of one thousand dollars. The patient was an old man in the employ of a local company, and had been paying a dollar a month to the Mission in return for medical treatment, should it be necessary. He entered the hospital suffering from a dislocated shoulder, and, possibly on account of his advanced age, the results of the treatment were not satisfactory. Upon the justness of the verdict no comment can be made as we are not in possession of the facts. We desire merely to call attention to the principles which were laid down. The judge held that the plaintiff was in a different situation from that of patients in England, who might make a choice of the institution where they would be treated, as he must either apply for treatment to the Mission Hospital or forfeit any benefit from the moneys paid by him for that purpose. The practice of monthly payments for hospital and medical attention was general throughout the province, and it was unreasonable to suppose that in the event of want of care in such medical attention the workmen could only seek redress from the physician, who might not be financially responsible, and concerning whose appointment or dismissal he had no voice.

Book Reviews

THE PRACTICAL MEDICINE SERIES, comprising ten volumes on the year's progress in medicine and surgery. Under the general editorial charge of GUSTAVUS P. HEAD, M.D., and CHARLES L. MIX, A.M., M.D. Volume I, GENERAL MEDICINE, edited by F. BILLINGS, M.D., and J. H. SALISBURY, M.D. Volume II, GENERAL SURGERY, edited by J. B. MURPHY, M.D., LL.D. Volume III, THE EYE, EAR, NOSE AND THROAT, edited by CASEY A. WOOD, M.D., D.C.L., ALBERT H. ANDREWS, M.D., and GUSTAVUS P. HEAD, M.D. Volume IV, GYNÆCOLOGY, edited by E. C. DUDLEY, M.D., and H. M. STOWE, M.D. Volume V, PEDIATRICS, edited by ISAAC A. ABT, M.D.; ORTHOPEDIC SURGERY, edited by JOHN RIDLON, M.D., with the collaboration of C. A. PARKER, M.D. Volume VI, GENERAL MEDICINE, edited by F. BILLINGS, M.S., M.D., and J. H. SALISBURY, A.M., M.D. Volume VII, OBSTETRICS, edited by J. B. LEE, M.D., with the collaboration of H. M. STOWE, M.D. Price of the series of ten volumes, \$10.00. Single volumes: Vol. I, \$1.50; Vol. II, \$2.00; Vol. III, \$1.50; Vol. IV, \$1.35; Vol. V, \$1.35; Vol. VI, \$1.50; Vol. VII, \$1.35. Chicago: The Year Book Publishers, 1913.

These volumes form a series of ten issued at about monthly intervals, and covering the entire field of medicine and surgery. Each volume is complete for the year prior to its publication on the subject of which it treats. The series is published in the first place for the general practitioner, but the arrangement in several volumes enables those interested in special subjects to buy only the parts they desire. No better series, having regard to the price, is issued, and any practitioner who takes them will be well equipped for the year. The range is large and the treatment is critical as well as explanatory. For ten years we have been calling attention to this series, and always with approval.

DISEASES AND DEFORMITIES OF THE FOOT. By JOSEPH NUTT, B.L., M.D. Illustrated. Price, \$2.75. New York: E. B. Treat & Company, 1913.

The author has written this book not so much for orthopedic

surgeons as for general practitioners upon whom the responsibility falls of preventing deformities, correcting abuses, and treating minor diseases of the bones and joints. There are many painful and disagreeable conditions associated with the feet which may be cured by simple measures, and these are fully set forth. It does not confine itself to elementary procedures, but introduces the practitioner to the whole subject of orthopedics. The directions appear to be extremely sensible, and many of them can be carried out by a person who has no special training in the subject, apart from what he is likely to receive in the ordinary medical course.

MODERN MEDICINE. ITS THEORY AND PRACTICE. In original contributions by American and foreign authors. Edited by SIR WILLIAM OSLER, Bart., M.D., F.R.S., and THOMAS McCRAE, M.D. In five octavo volumes of about 1,000 pages each, illustrated. Volume I, Bacterial Diseases, Diseases of Doubtful or Unknown Etiology, Non-Bacterial Fungus Infections, the Mycoses. Price per volume, cloth, \$5.00, *net*; Lea & Febiger, publishers, Philadelphia and New York.

The publication of the first volume of this work is so important an event that it demands more than formal mention; and yet the authors are already so far-famed that formal notice will best serve to carry knowledge to the readers of the JOURNAL that the book has appeared. The time has gone by for eulogy and panegyric of these writers. They are their own surest critics, and they have not allowed the volume to go forth without forestalling all criticism which might be made by other hands. The book is precisely as they would wish it to be. The publishers have issued an announcement which we hasten to pass on to readers who may not have received it:

"This new issue is published under the same editorial management as the original work, and the corps of distinguished contributors is virtually the same. The unusual excellence of the material presented is thereby assured, and the reduction in the price of the complete work, now in five volumes, will make it appeal strongly to all practitioners of medicine, and especially to those who do not possess the original work. Comparison with the first volume of the previous edition shows that the text has been set in much larger and clearer type, the size of the page has been increased, and there are nearly two hundred pages more than in the original first volume. The many changes which have occurred in both the scientific and practical sides of medical knowledge in the last six years are shown

in the complete reorganization of the subject matter. The introductory chapter, the historical section, the article on the biology of the mosquito, the contribution on "inheritance and disease," the introductory section on protozoa and the article on life insurance have been omitted. On the other hand, new or practically new sections will be found on pellagra, beriberi, trypanosmiasis, Malta fever, and on electrical diagnosis in cardiac diseases. The condensation has been principally in the etiological and pathological portions, and throughout the work increased stress has been laid on diagnosis and treatment."

MATERIA MEDICA, PHARMACOLOGY, THERAPEUTICS AND PRESCRIPTION WRITING. For Students and Practitioners. By WALTER A. BASTEDO, Ph.G., M.D. Octavo of 602 pages, illustrated. Price, cloth, \$3.50 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian agents: J. F. Hartz Company, Limited, Toronto.

One is reminded by the appearance of this new and important book that physicians do administer medicine for the relief and cure of their patients. It is a book for the physician, and is especially timely at the moment when, as the author suggests, we are at the dawn of a new era of simple and practical therapeutics. Scepticism has already gone too far, and a new credulity has supervened upon the old. This book will do something to dispel both. If fewer drugs will be used, the treatment of the sick will be better,—that is the author's aim. He takes his stand upon critical laboratory research and compares the results with those which are obtained at the bedside, which, after all, is the final laboratory. The chapter on alcohol is extremely well done. It is moderate and just. Much attention is given to digitalis in the light of the newer discoveries. The book is critical besides being informing, and the grounds for criticism are carefully stated. The author believes that medicine sometimes cures, often relieves, and always consoles. He makes it his business to carry that belief to others.

PYORRHEA ALVEOLARIS. By FRIEDRICH HECKER, B.Sc., D.D.S., A.M., M.D. Illustrated. Price, \$2.00. St. Louis: The C. V. Mosby Company, 1913.

The author, Dr. Hecker, puts forward a fresh view of this disease. He believes that it is a constitutional rather than a local condition, and he points out the grave results which may follow from it, namely, tonsillitis, endocarditis, and a general infection. The book is an elaboration of this thesis and is the most complete monograph which we have yet seen dealing with the subject.

Books Received

THE following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

THE HISTORY OF MEDICINE, WITH MEDICAL CHRONOLOGY, BIBLIOGRAPHIC DATA, AND TEST QUESTIONS. BY FIELDING H. GARRISON, A.B., M.D. Octavo of 677 pages, many portraits. Price, cloth, \$6.00 net; half-morocco, \$7.50 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian agents: The J. F. Hartz Company, Toronto.

PRINCIPLES OF SURGERY. BY W. A. BRYAN, A.M., M.D. Octavo of 677 pages, with 224 illustrations. Price, cloth, \$4.00 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE, BY JAMES M. ANDERS, M.D., Ph.D., LL.D. Eleventh edition, thoroughly revised. Octavo of 1,335 pages, illustrated. Price, cloth, \$5.50 net; half-morocco, \$7.00 net. Philadelphia and London: W. B. Saunders Company. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

A TEXT-BOOK OF PHYSIOLOGY; FOR MEDICAL STUDENTS AND PHYSICIANS. BY WILLIAM H. HOWELL, Ph.D., M.D. Fifth edition. Octavo of 1,020 pages, illustrated. Price, cloth, \$4.00 net; half morocco, \$5.50 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

RESEARCHES ON RHEUMATISM. BY F. J. POYNTON, M.D., and ALEXANDER PAINE, M.D., D.P.H. Illustrated. New York: The Macmillan Company, 1914. Toronto: The Macmillan Company of Canada, Limited.

Retrospect of Medicine

RECENT ADVANCES IN TROPICAL MEDICINE

IN this review, the diseases mentioned are arranged in a classification which depends upon the systematic position of the parasite which causes the disease. Though such a classification may be inapplicable to some of the diseases of temperate climates, in which our knowledge of the cause and method of action of that cause is deficient; yet it can be applied to many of the diseases of the tropical climates. It is ideal and satisfying in its precision; for that reason it is followed.

Since many tropical diseases are the expression of an infection with a parasite which is transmitted by an intermediate host, advances in knowledge may be concerned with the parasite, with the intermediate agent, and with the host or hosts. Examples of matters with which the parasites are particularly connected are their classification, their morphology, their development, or, it may be, the description of new species. The transmitting agent is often an insect. An increase in our knowledge of its bionomics, or of the nature of the process undergone by the parasite while it is within its insect host, may lead to the suggestion of measures by which the insect can be exterminated and the propagation of the disease prevented. A study of the hosts, for it has been shown that other animals besides man may be infected by a parasite which causes human disease, may lead to a knowledge of the way in which the parasite produces symptoms, and of means by which infection with it may be cured, or avoided.

Bacteria and fungi are no less parasites than are intestinal worms, although the term, parasite, in popular usage, is usually reserved for the animal parasites. A large number of the most important diseases of the tropics are caused by unicellular animal parasites—by protozoa. A simple classification of the protozoa divides them into four main groups, the rhizopoda, flagellata, sporozoa, and the infusoria. To these groups is added a limbo—*incertæ sedis*—in which parasites of uncertain position are placed. Among the metazoa, or many-celled animals, which are important as parasites in the tropics, the worms and insects take important places.

The amœbæ are rhizopoda, and amœbic dysentery is one of the most important of tropical diseases. The classification of the amœbæ parasitic in man has been much simplified during the past year, and at present it is held that there are but two species, one of them is non-pathogenic—it can be cultivated, either in symbiosis with bacteria or on media smeared with organ debris; the other is pathogenic and can not be cultivated. The pathogenic amœbæ have been shown to be capable of producing abscesses in other parts of the body than the liver, and of causing phagedenic sores in the walls of an abdomen, with which pus containing amœbæ has been brought in contact by the draining of a liver abscess. Emetin, a principle obtained from ipecacuanha, has been shown to be capable of destroying amœbæ, and of arresting amœbic dysentery and liver abscess almost instantaneously. The treatment of bacillary dysentery has also advanced, and large doses of polyvalent serum, supplemented by nursing and a diet of sour milk, will save many cases.

The trypanosomes constitute one of the most important classes of the flagellata. They are transmitted by biting insects, and they cause serious disease in man—sleeping sickness—and in animals. Some of them are transmitted by the bites of tsetse flies, and it was thought that each trypanosome was probably transmitted by a special fly. It has been shown, however, that several trypanosomes can be transmitted by more than one species of tsetse fly; this means that the development undergone by the trypanosome in the body of its insect host, may proceed in more than one variety of tsetse fly. Only those trypanosomes ingested at a suitable stage of their development will continue to develop within a tsetse fly. Development within the fly can not take place unless the temperature of the air is above 20°C; this is probably the reason why sleeping sickness does not spread in cool highlands where tsetse flies exist. The nature of the development undergone by the trypanosome within the tsetse fly has not been entirely elucidated. There seem to be two types of development. In one, trypanosomes capable of producing an infection, multiply in the proboscis. In another, trypanosomes multiply in the gut, and then go to lie in the salivary glands; thence they probably go out to produce an infection when the fly feeds upon a susceptible animal. There is some ground for believing that the development of trypanosomes proceeds best in flies which do not feed upon blood after that feed at which they became infected. It has long been known that wild animals of Africa—big game—are often

infected, without obvious symptoms, by trypanosomes, which will produce fatal disease when inoculated into domestic animals. It has only recently been shown that antelopes and other animals may also be infected with trypanosomes indistinguishable from those which cause at least one form of human trypanosomiasis in Africa. In the same way animals have been shown to be a host of a trypanosome of a different type, which is the cause of a fatal human disease in South America. No specific treatment is known by which trypanosomes can be destroyed with certainty. Neither is there any means of killing the insects which transmit the trypanosomes, as mosquitoes can be killed; therefore, in trypanosomiasis, it is doubly necessary to attack the parasite through its hosts. If the animals which harbour trypanosomes and constitute a reservoir, from which tsetse flies can derive infection, were destroyed, much would be done towards controlling the progress of trypanosomiasis. It has been shown that some trypanosomes may be transmitted mechanically by several flies, through infected blood remaining on their biting parts, if, when driven off from an infected animal, they quickly fly to an uninfected one to resume feeding; it is possible that some instances, in which all those inhabiting a hut are infected, may be explained by such a mechanical transmission of trypanosomes through the bites of mosquitoes. Trypanosomes of the rat can be transmitted from rat to rat by the bites of the rat flea. The infection may be also transmitted by an entirely different process. A non-flagellate stage of the trypanosome is excreted with the fæces of the flea. If fæces containing this stage be ingested by a rat it become infected; so far as is known, none of the pathogenic trypanosomes are transmitted in this way. Trypanosomes recently found in hens, are transmitted by the bites of a small black fly, one of the *Simulidæ*.

Attempts to find a specific for the treatment of trypanosomiasis continue. Compounds of antimony have been shown to be as trypanocidal as are those of arsenic; for example, atoxyl and its derivatives. A most interesting outcome of this work has been to show that some drugs are capable of acting directly upon individual parts of trypanosomes, and so it has been possible to create, by drug treatment, a race of trypanosomes which lacks a kinetonucleus.

Very little is known concerning the nature of the immunity which exists in many protozoan diseases. The observation that an immunity to *Trypanosoma lewisi*, the rat trypanosome, can be produced, in rats, by the inoculation of old cultures which have become avirulent, is an interesting one.

New methods by which trypanosomes, and other protozoan parasites, can be stained in sections, have been elaborated. Already, by their use, much has been learned concerning the tissues which are most affected by these parasites. One of the most constant changes is a proliferation of the endothelial cells. The liberation into the circulation of such cells is probably at least one of the causes which leads to the increase in the number of large mononuclear cells in the blood of patients suffering from protozoan infections.

Two very important diseases are caused by parasites, which are classified with the herpetomonads, another genus of the flagellata. *Leishmania* (or *Herpetomonas*) *donovani*, is the cause of a fatal disease characterized by progressive emaciation, splenic enlargement, and chronic fever. This disease, first called dum-dum fever or kala-azar, has been shown, under the name of tropical splenomegaly or infantile kala-azar, to occur in all the countries bordering on the Mediterranean, throughout Asia, and occasionally in South America. The other disease, caused by *Leishmania* (or *Herpetomonas*) *furunculosa*, is characterized by a superficial, painless swelling, which usually ulcerates; it is known by many names, Delhi boil is one of the commonest. It has been shown that these ulcers may occur on mucous membranes as well as on cutaneous surfaces. This form of leishmaniasis has the same distribution as the other and, in addition, seems to occur throughout Central and Southern America.

About the Mediterranean, dogs and cats have been found to be infected with a parasite which produces similar symptoms, and in appearance is identical with that which is found in cases of infantile kala-azar. The infection can be transmitted from dog to dog by means of fleas. The suggestion that human beings acquire the infection in the same way is a pertinent one. In India experiments have been made which tend to show that kala-azar may be transmitted by the bites of bedbugs; but the development normally undergone by the parasite within the bedbug will not proceed if the bugs have a second feed of blood after the infecting one. No means of curing kala-azar is known, although recovery has been reported in one instance, a case treated by salvarsan.

Spirochaetes and treponemas constitute very important classes of the flagellata. By far the most important advance in our knowledge of diseases caused by spirochaetes, is that they are all amenable to treatment by salvarsan. Neosalvarsan seems to be even more spirochæticidal than salvarsan, and to be better tolerated by the

patient. This discovery means that diseases, such as the relapsing fevers—which are transmitted by ticks, or through lice,—yaws, and various ulcers, can be cured within a few hours by one, or at the most, two injections. Antimony has also been shown to be of service in the treatment of yaws. New spirochætes have been described in the intestines of fish and in the blood of guinea pigs. That the bite of any insect may be a potential source of danger is suggested by experiments in which spirochætes have been mechanically transmitted by the bites of the common stable fly, a fly which is able to transmit infantile paralysis. An interesting point, which may prove to be of value in experiments designed to ascertain in what form the spirochæte is transmitted by ticks, is that the sensory organs by which *Ornithodoros* ascertains whether material is fit for food, are placed at the tips of its first pair of legs. If these legs be amputated the ticks can be made to feed upon anything.

The sporozoa are a large and rather heterogeneous assemblage. Among the most important of them are the *Hæmosporidia*, which includes amongst its members the parasites of malaria. A simple method of cultivating malarial parasites, which is applicable to other intracellular blood-parasites, has been devised. It depends upon the addition of a small amount of dextrose to the blood. Parasites will multiply, especially near the surface of blood so treated, when it is kept at blood temperature. By means of this method it has been possible to study little-known stages in the development of the malarial parasite, and an observation made on cultures of the *æstivo-autumnal* parasite has suggested a reason for the blockings of capillaries, and the consequent serious lesions, which are most prone to occur in infections by that parasite. The adult asexual forms seem to be sticky, and they tend to clump together. It has been suggested that through this tendency these parasites may be caught in the capillaries. Malarial parasites, very similar in appearance to those affecting man, were formerly thought to be harmless parasites of monkeys. It has been shown that they, like the newly-discovered parasite of antelopes, may cause serious illnesses accompanied by fever in their animal hosts. The illness in the case of the monkeys may even be fatal, and be accompanied by hæmoglobinuria and other lesions similar to those observed in malaria.

The mechanism of the relapses, which may occur some years after a patient has been apparently cured of malaria, has always been much discussed. Many reasons have been brought forward

to support the opinion, now generally accepted, that such relapses are to be explained by the persistence of asexual parasites in apparently cured persons, in numbers insufficient to cause symptoms, and too small for the parasites to be detected, except by a most searching and sustained examination. The relapse, with its rapid multiplication of parasites and the production of symptoms, often depends for its initiation upon the intervention of some cause, such as "lowered resistance," in the host which favours the development of the parasites.

Experience, derived from the treatment of malaria among those engaged in the construction of the Panama Canal, has added support to a generalization suggested by the results of the experimental treatment of trypanosome infections. It was shown there that the best method of treating trypanosomiasis was with full doses, given as frequently and as early in the course of the infection as possible. In the Canal Zone the rule is to give not less than forty-five grains of quinine a day, in doses of fifteen grains each. It is found that doses less than these have a tendency to produce quinine-resistant strains of malarial parasites, which become exceedingly difficult to eradicate. It was natural that numerous attempts should be made to treat malaria by salvarsan, and it is disappointing that this drug has turned out to be of value only in the treatment of the benign tertian form of malaria.

That small parasites may have lesser ones "upon their backs to bite them," has again been shown by the discovery of a small biting fly which sucks blood from the distended abdomens of recently fed mosquitoes!

The *Babesia* include an important group of parasites, which cause the "red water" of cattle and of other animals. It has been shown that a drug, trypan blue, elaborated during attempts to find a cure for trypanosomiasis, has a very curative action in diseases due to some of the babesias. The babesias may be cultivated in the same way as the malarial parasites. There is a member of this group which is especially interesting, because of its extremely small size. In stained preparations, it appears as a small dot of chromatin, usually lying near the periphery of a red cell. It apparently has no cytoplasm. This parasite has been found to be transmitted, like many of the other babesias, by ticks.

The knowledge that dysentery might be caused through infection by *Trichomonas*, a flagellate, and *Balantidium*, an infusorian, has received additional confirmation from several parts of the world during the past year.

One or two new parasites, causing serious and fatal infections, must be placed among the protozoa of uncertain situation; here also are placed those diseases caused by filterable and by unknown viruses. Papatassi, phlebotomus, or sand-fly fever, is being shown to have a much wider distribution than was suspected when it was first described in Southern Austria. It exists in many places about the Mediterranean basin. Although much has been learned concerning the bionomics of the fly which transmits this disease, nothing has been discovered which promises to be of practical importance in its prevention.

Although several new species of worms, parasitic in man, have been described, one of the most important advances in our knowledge of verminous infections has been the proof that *Filaria diurna* is the embryo form of *Filaria loa*, and that *Filaria nocturna* is the embryo form of *Filaria bancrofti*. It has been shown that an infection by the latter filaria is, through blocking of lymph channels and through the lesions that may be produced in lymph glands, quite sufficient in itself to cause elephantiasis. Nevertheless it is certain that in many cases of elephantiasis a large part of the œdematous and fibrotic changes is due to a chronic, localized, streptococcal infection.

As is usual, much work has been done on the description, classification and bionomics of all of the injurious insects. One of the most interesting pieces of work has been done upon *Auchmeromyia luteola*. The larva of this fly—a grub—has the blood-sucking habits of the bedbug. It has been shown that other closely-related flies have exactly the same habits, and that in each species, the female fly deposits the eggs, which are to become larvæ, in localities where the larvæ will have an opportunity of feeding upon their especial host when they are hatched.

JOHN L. TODD.

THE private patients' pavilion of the Toronto General Hospital was opened January 6th. The building is complete in itself and is intended to accommodate one hundred and fifty patients. It is provided with its own operating rooms, an x-ray room, and its own separate staff and nurses, and throughout is most beautifully equipped.

German Literature

ABSTRACTS OF GERMAN LITERATURE

ERYTHEMA NODOSUM AND TUBERCULOSIS. BY PROFESSOR E. MORO, of Heidelberg. *Muenchener Medizinische Wochenschrift*, No. 21.

THE author, Professor Moro, wishes to take exception to the statement made by Pollak in the *Wiener Medizinische Wochenschrift* to the effect that erythema nodosum occurs, certainly in childhood, in tuberculous individuals exclusively, and is, indeed, a tuberculous skin lesion, the statement being based on the fact that forty-eight children with this condition, examined in the Vienna Poliklinik, gave without exception a positive cutaneous reaction to tuberculin: and this, moreover, at an age when tuberculosis is relatively rare. Moro's investigations have resulted in five negative reactions in forty-eight cases of erythema nodosum, and he claims that Pollak's figures merely remind one of the frequency with which tuberculosis attacks Viennese children. The author does not deny that erythema nodosum and tuberculosis may bear some relation to each other, for he reminds us that he was the first to investigate this question and has published the report of an instance where a child with tuberculous spondylitis was given the tuberculin test with the result that there appeared on the legs petechial and purpuric spots, many of which assumed the appearance of erythema nodosum. There seems to be no doubt of the tuberculotoxic nature of the above condition. On the other hand the inoculation of guinea pigs with material obtained from an excised nodule has always been negative. One cannot then say that the nodules are tuberculous lesions, indeed their appearance cannot always be considered as due to the existence of a tuberculous *allergie** in the tissues, as one might be inclined to believe. But it is known that children suffering from erythema nodosum frequently have purpura and exhibit a marked vasomotor excitability to chemical irritation which alone could explain the intensive cutaneous tuberculin reaction.

*Allergie: von Pirquet's term for a condition of acquired immunity associated with the phenomena of anaphylaxis. Translator.

HYPERTROPHY OF THE PROSTATE. BY PRIVATDOZENT KIEL-LEUTHNER, of Munich. *Muenchener Medizinische Wochenschrift*, No. 31.

The author thinks we must consider hypertrophy of the prostate as a proliferative neoplastic process; as a new growth from the gland epithelium, characterized by large or small retention cysts; but of its immediate cause we are as ignorant as that of other tumours. There has been a decided change in the teaching regarding the rationale of operative treatment for this condition. Until a short time ago surgeons were of the opinion that by the suprapubic route they could remove the whole prostate; even Freyer was of the opinion that he was practising total extirpation of the gland. It seems astonishing, with one's knowledge of the anatomy of the prostate, that it should have been believed that with the finger, one could remove in a few minutes an organ that has no true capsule, and is very closely attached to the surrounding tissues. Latterly Tandler and Zuckerkandl of Vienna have taught that one only succeeds in partially shelling out the gland; that this must be so if the sexual function is retained. The so-called middle lobe and the lateral lobes which spread out from it and encircle the urethra above the verumontanum are the parts that hypertrophy. Certain French surgeons have gone so far as to say that the hypertrophy is of accessory prostate glands, and not of the organ itself. If the whole gland were enlarged the prostatic urethra would be lengthened, which is not the case. The fact that the extirpated lobes often have the appearance of the complete prostate is frequently misleading. In a properly performed operation the sexual potency is retained, since it is only the part of the urethra which is above the verumontanum that is occasionally removed with the hypertrophied parts of the gland. The perineal route causes more danger to the ejaculatory ducts than the suprapubic. Again one must consider the great danger to which the patient would be exposed from hæmorrhage from the prostatic plexus and from extravasation, if the whole gland were actually removed. In summing up one may say: that there are parts of the prostate that rarely hypertrophy; that with the modern operation the prostate remains; and that the method, although a conservative one, results usually in a permanent cure.

SERUM THAT WILL NOT CAUSE ANAPHYLAXIS. BY DR. WILHELM EICHHOLZ. *Muenchener Medizinische Wochenschrift.*

The ordinary form of dried serum, in spite of many advantages, especially for use in the tropics, cannot be recommended, since it is difficult and sometimes impossible to redissolve it in sterile water. The author has experimented with a new method of preparing a dried serum with excellent results. The ordinary immune serum is dried at a low temperature under aseptic precautions and the dried product ground to a fine powder which is suspended in sterile olive oil. The result is an oily solution that is sufficiently fluid at room and body temperature and can be injected by means of the ordinary syringe. The solution contains no preserving fluid, but by means of its absolute freedom from water there is no danger of deterioration or bacterial pollution, for bacteria do not multiply in this medium. It has moreover another distinct advantage: it does not produce anaphylaxis. Our knowledge of albumen anaphylaxis leads us to believe that after the sensitizing injection there are formed in the organism specific proteolytic ferments which, after a second injection at a later period, cause a rapid splitting up of the injected albumenoids, and as a result a flooding of the system with toxic albuminous products. The dried serum does not produce any of these results, and this was proved thus: a number of guinea pigs were injected subcutaneously with horse serum and after twenty-one days some of these were again injected with this serum, while the remainder were given the specially prepared dried product of the serum. The severity of the anaphylaxis produced was gauged chiefly by the drop of body temperature. The animals that received the reinjection of fluid serum exhibited a fall of temperature averaging 5° C. Four of these animals were very ill. In the case of the guinea pigs that received the dried serum there was scarcely any reaction, the average fall of temperature being 1.4° C., and none of them showed any signs of sickness. The efficiency of the dried serum as an antitoxin is proved satisfactorily by various experiments, but the tables showing the results are too long to reproduce in these columns. The antitoxic action is not so rapidly apparent as with the ordinary serum; but it is better, for instance in a case of diphtheria, to have a delay of perhaps an hour in the effects of the dried serum than to subject the patient to the danger of anaphylactic shock from the ordinary fluid preparations.

London, Ontario.

G. C. HALE.

Obituary

DR. ROBERT C. YOUNG, of Detroit, died November 23rd. Dr. Young was born in Wentworth County, Ontario, July 29th, 1850. He was educated in Hamilton and took his medical training at McGill University, graduating in 1873. He then spent several months as house physician in the Hamilton Hospital, after which he took up a practice in Ridgetown. In 1909 he left Ridgetown and went to Detroit, where he practised until the time of his death. Dr. Young leaves a widow and one son, Mr. Clinton Young, of Chicago.

DR. C. A. DUGAS, of Montreal, died January 7th, in the fiftieth year of his age. Dr. Dugas was born in St. Jacques l'Achigan, Que., and was educated at St. Mary's College, Montreal. He graduated from Victoria University in 1887. Dr. Dugas was well known in Montreal, and for the past twenty years had held the position of coroner's physician.

DR. JAMES D. BALFOUR, of London, Ontario, died of pneumonia January 7th, in the fifty-eighth year of his age. Dr. Balfour was born near Mitchell in the county of Perth, Ontario. Before taking up the profession of medicine he taught for some years. He then entered the Western Medical School and took his M.D. degree in 1887. After practising for a short time in London, Ontario, he took a post-graduate course in the University of Edinburgh. On his return to London, Dr. Balfour became medical superintendent of Victoria Hospital, a position he held for fourteen years, retiring in March, 1902. Since then he has occupied the post of lecturer on the staff of his Alma Mater. He was also an examiner on the Ontario Medical Council and medical director of the Northern Life Insurance Company. In his death, the profession has lost one of its most able and devoted members. In his younger days Dr. Balfour was a distinguished athlete. Dr. Balfour leaves a wife, three sons, and one daughter.

News

MARITIME PROVINCES

THE prize for the most efficient clearing hospital in the Canadian Militia has been awarded to No. 2 clearing hospital, of which Major F. S. Ford is the commanding officer. This unit was trained at Sussex, New Brunswick, in June, 1913.

THE plans are in progress for a tuberculosis hospital at St. John, New Brunswick.

A SURVEY is to be made of certain sections of St. John, New Brunswick, to determine the conditions of housing and sanitation with a view to their improvement; and, if deemed advisable, the legislature will be requested to take up the matter and to assist the health authorities in their efforts to promote sanitation.

THE Halifax Medical Society recently passed a resolution in favour of the establishment of a sanitarium for tuberculosis, to be erected by the city. A second resolution was also passed in favour of frequent chemical and bacteriological examinations of the water of the city. The resolutions were referred to the board of health. It is estimated that the cost of the proposed sanitarium would be about five thousand dollars a year, that is on the basis of a weekly cost of twelve dollars for each patient.

THE plans are being prepared for a hospital at River Glade, New Brunswick. The proposed building will accommodate one hundred patients and will cost about fifteen thousand dollars.

MR. J. F. McMURRAY has been elected president of the Victoria Public Hospital at Fredericton. During the month of December forty-two patients were treated in the hospital and two deaths occurred.

A MEETING of the board of health took place at Fredericton, January 6th. Among other matters, the payment of one dollar a week for each pauper in the provincial hospital for the insane, at

Fairville, came up for discussion. According to legislation passed last session, this sum must be paid by the municipality to which the person belongs, the law to come into force from January 1st of the present year. The act met with a certain amount of criticism, as it was considered by some members of the board that this expense should not be borne by the public. The patients in the asylum now number thirty-four, and the institution is already somewhat overcrowded.

ONTARIO

DR. McCULLOUGH recently drew attention to the prevalence of typhoid in the neighbourhood of Windsor. He attributed the increase in the number of cases to the poor water supply.

THE children's hospital at Hamilton is almost completed.

A HOUSE with six and a half acres of land has been purchased at Brantford and will be used as a smallpox hospital. The former building was quite out of date and had been partially burnt down.

A DEPUTATION from the Hamilton Health Association waited upon the board of control, October 22nd, with the request that \$75,000 be granted for the purpose of building and equipping a new infirmary. The present building was given by Colonel Grafton and was intended to accommodate eight persons, whereas at the present time twenty-two patients are there. It is now necessary, in order to continue to receive the government grant, to erect a new building with accommodation for from seventy-five to one hundred patients, and this the Association is unable to do unless assisted financially by the city council.

AT the recent municipal elections the Hamilton Hospital by-law was passed by a majority of about fifty votes. Arrangements will be made accordingly to build a hospital on the site which already has been purchased on the mountain.

DURING the past year, under the able supervision of Dr. C. J. Hastings, the medical officer of health, a great deal has been done to improve conditions in Toronto in so far as the public health is concerned. The city has been divided into eighteen sanitary districts, each in charge of an inspector. The number of cases

of typhoid fever, diphtheria, and scarlet fever has been less than it was two years ago, in spite of the increasing population. The deaths attributed to these causes during the first eleven months of 1912-13 were, typhoid fever, 101; diphtheria, 221; scarlet fever, 98.

The by-law to grant \$250,000 to a hospital to be established in the east end of Toronto was defeated on January 1st.

THE Indian village of Wickewimiking, on Manitoulin Island, is quarantined on account of smallpox. The population of the village is over fourteen hundred.

At a meeting of the Hamilton board of health, on January 14th, application was made by a citizen for compensation. The applicant claimed that he had been obliged to discontinue his work because his child had contracted smallpox, and the family had been quarantined. The claim was rejected unanimously by the board on the grounds that the child had never been vaccinated.

THE report of the work accomplished during the past year by the district nurses in Peterborough shows that 174 patients were attended, and 2,745 visits were paid. The cases are classified as, general medical cases, 77; tuberculosis cases, 52; including 36 cases of pulmonary tuberculosis; surgical cases, 30; obstetrical cases, 15.

QUEBEC

THE following cases of contagious disease were reported in Montreal during the week ending December 13th. Diphtheria, 51; scarlet fever, 54; typhoid, 1; measles, 10; chicken-pox, 28; tuberculosis, 31. There were 240 births, and 168 deaths, 66 of which were children under five years of age.

THE Quebec Medical Society, gave its annual dinner at Kent House on Saturday evening, December 13th. Dr. E. M. A. Savard presided.

AN outbreak of scarlet fever is reported from Dunham.

MANITOBA

THE by-law for a grant of \$265,000 to the Winnipeg General Hospital was defeated for the second time on December 12th. It was submitted first in October, when the number of votes registered was 1,539 in favour of the grant and 1,405 against it. As the total number of votes was so small, the by-law was submitted a second time with the result that 3,070 voted in its favour and 3,097 voted against it.

AN outbreak of smallpox is reported in the neighbourhood of Goodlands, south of Deloraine, and in the district surrounding Napinka.

ALBERTA

A MUNICIPAL abattoir is to be erected at Calgary, at a cost of one hundred and twenty-five thousand dollars.

DR. A. BRAITHWAITE, of Edmonton, has been appointed to the Medical Council of Canada in place of the late Dr. G. A. Kennedy, of Macleod.

SASKATCHEWAN

AN outbreak of smallpox is reported among the Indians at Piapot's Reserve, north of Regina. It seems probable that the disease has existed there for some time.

REV. EDWARD HERBERT GRAY, M.D., has been appointed superintendent of the Waddell Memorial Hospital which was recently erected at Canora.

AT a meeting of the Saskatchewan College of Physicians and Surgeons held at Regina, December 30th, it was announced the following had successfully passed in all their subjects at the last examination: W. D. Brace, C. Coulter, C. H. Edmunds, W. H. Godfrey, O. M. Irwin, W. C. Kitchen, J. C. Kittlesey, R. M. Laroye, W. H. Mains, J. M. McLean, J. R. Pare, H. J. Robertson, E. A. Shaw, A. Lousy, F. J. Thompson, J. A. Murison, R. M.

Johnstone, J. L. A. Acrogy, and O. N. Singleton. Stars were granted to M. H. W. Fizzel, E. A. Richardson and J. A. O'Brien.

THE annual meeting of the Saskatchewan Medical Association this year will be held at Saskatoon during the month of June.

It is reported that the provincial medical library, if ultimately established, will be placed in the university buildings at Saskatoon, instead of at Regina, as was suggested at first.

THE establishment of a municipal abattoir at Regina is under consideration. A resolution urging its establishment was forwarded recently to the city council by the Retail Merchants' Association.

THE plans are being prepared for a nurses' home in connexion with the Regina General Hospital.

At a recent meeting of the council of the rural municipalities of Rosthern, a discussion arose as to the advisability of continuing the grant of \$900, which was made last year to the maintenance fund of the Alexandra Hospital. At the recent elections, a by-law in aid of the hospital was defeated. It was decided to grant the sum of \$75 to the hospital for the month of January, and, in the meantime, to consult the wishes of the ratepayers in the matter.

BRITISH COLUMBIA

THE contract has been let for the new administration building and the nurses' home of the Vancouver General Hospital. So far as possible, material of Canadian manufacture only will be used in the construction of these buildings. The treasurer's statement for the month of November showed a deficit of \$2,500, and in order to remedy this, it has been decided to increase the fees charged for semi-private wards from \$1.75 to \$2, a day, and those for private wards from \$2.00 to \$3.50 a day.

A BY-LAW is to be submitted to the ratepayers of Nelson to grant \$20,000 towards the construction of the new Kootenay Lake General Hospital. It is proposed to commence the building next spring. A request will also be made to the legislature next session for a grant of \$50,000. A couple of years ago a civic grant of

\$15,000 was made and an equal amount subscribed. Thus \$30,000 was available for the new hospital and this amount the provincial government doubled, so that there is now on hand \$60,000. Some delay has occurred in the erection of the hospital, but it is hoped that a hospital will now be built large enough to meet the requirements of the city, due allowance being made for its growth.

A BY-LAW to grant \$15,000 to the Royal Inland Hospital has been introduced by the Kamloops city council.

ARRANGEMENTS are being made to add a building for advanced cases of tuberculosis to the sanitarium at Kamloops. The sum of \$75,000 is already in hand, and the provincial government will be asked next session to contribute a further \$75,000. It is hoped that the building will be completed by the early autumn, as the present accommodation at the sanitarium is overtaxed.

It is probable that, during the next session of the legislature, bills will be introduced to regulate the milk supply and to improve sanitation, especially in so far as new buildings are concerned, throughout the province.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Public Health Journal, December, 1913:

Immigration and its effects upon the public health	P. H. Bryce.
Preventive medicine and the family doctor	A. H. Wright.
The relation of the health officer to the community	M. R. Bow.
School Buildings	J. H. Puntin.
Heating and ventilating modern school buildings.	S. S. Kennedy.

Dominion Medical Monthly, January, 1914:

Venereal diseases	J. S. Sprague.
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The Canadian Journal of Medicine and Surgery, January, 1914:

- The necessity for the routine examination
of the nose and throat . . . J. P. Sproule.
Personal impressions of the seventeenth
International Congress of Medicine. C. Starr.

The Canadian Practitioner and Review, January, 1914:

- Foreign bodies in the air passages . Sir Rickman Godlee.
The harbour of indifference, an allegory . G. D. Porter.
Isolation hospital, planning and manage-
ment T. H. Whitelaw.
The backward child W. E. Struthers.

The Western Medical News, December, 1913:

- A few hurried notes regarding beri-beri G. R. Peterson and
J. P. Des Rosiers.

Le Bulletin Médical de Québec, January, 1913:

- Transplantation cartilagineuse dans un
cas de difformité du nez . . . J. Vaillancourt.
Obstruction intestinale par étranglement
et hernie internes—paparotomie. . G. A. Paquet.

Medical Societies

TORONTO ACADEMY OF MEDICINE

At the monthly general meeting of the Toronto Academy of Medicine, December 2nd, 1913, Dr. Oskar Klotz, professor of pathology and bacteriology in the University of Pittsburgh, delivered an address on "The Triple Alliance, Heart, Kidney and Arterial Disease." (See page 85.)

The discussion following the reading of this paper was opened by Professor A. McPhedran. Dr. McPhedran drew attention to the very great interest of the subject matter, the view that these hypertrophies are really the result of inflammations. He pointed

out that arteriosclerosis and high blood pressure are synonymous and that these pathological conditions do not go hand in hand.

Dr. McPhedran then moved a vote of thanks to Dr. Klotz for his kindness in coming to Toronto, and addressing the Fellows of the Academy on matter so full of interest.

Dr. Henderson said that Dr. Klotz had presented in a very clear manner a conception which would be of great advantage to all in future work, and referred to the main theme of the paper as one of very great interest. He would not attach too much weight to the increased viscosity of the blood in hypertension of kidney disease; he thought there might be a misconception by members of the Academy as to Dr. Klotz's view in regard to the two distinct types of nephritis, namely the type secondary to arterial disease and based on hypertension—the type arising as a result of absorption of autogenic material or possibly increased secretion of adrenalin and associated with worry and strain, and, secondly, the type coming on as a result of primary infection. It was important to remember that there are these two types of kidney disease, and Dr. Klotz, by his exposition of the subject and his very excellent drawings, had given conclusive evidence of the existence of the latter type as well as of the former.

In seconding the vote of thanks, Dr. Henderson, said that all had enjoyed the paper very much indeed and would profit by it, and each member would be able to go about his clinical and surgical work with a fuller and somewhat different conception of this subject.

Dr. R. J. Dwyer said that Dr. Klotz did well in calling attention to the fact that in cases of rheumatism, clinicians should not overlook the possibility of inflammation of organs other than the heart and the joints. The physician may often overlook whole series of lesions involving the circulatory system. He wished to ask whether there was clinical evidence whereby these special acute inflammatory conditions could be detected before death. He also asked whether there was early evidence to show that an attack of acute inflammatory disease in childhood would be followed later in life by a cardiac renal lesion.

Dr. William Goldie said the discussion of this subject was of more than ordinary interest in that the idea now held would be crystalized. He referred to infection and its localization, and said there was an analogy to that in nearly all infectious diseases. He mentioned typhoid fever as an example—a disease that follows for a certain number of days a definite course without any extraoridin-

ary happenings, after this comes a period in which agglutinins and various other antibodies are formed. Evidence of this is seen in the rose spots and also in various outbreaks in the body of local inflammations, as meningeal disturbances and inflammations in other organs, these localizations being afterwards confirmed at post-mortem, for example in the liver, heart, blood vessels, kidneys and throughout the body. These are acute and, as a rule, rapidly passed over rarely leaving evidence of their presence, except sometimes in some of the grosser vascular changes. In the more chronic and less irritative type such as Dr. Klotz had taken up, it is very hard for the clinician to associate the picture laid before the members with the clinical picture. All know that in these infectious diseases the kidney may show some disturbance, but not often is more made out clinically than to find traces of albumen and sometimes some desquamation, sometimes casts and sometimes evidence of a more marked disturbance. It is well to remember the point raised, that one infection leaves but little trace, whereas recurrent infections bring about serious results showing the necessity of recognizing and treating such infections in childhood in order that the recurrent infections and final atrophic changes may be prevented. He was glad to note that Dr. Klotz did not use the term "itis" very often in referring to the later changes that occurred. He kept fairly to the words "acute inflammatory." Dr. Goldie did not know any term that clinicians used so loosely as "itis," in such words as nephritis, myocarditis, etc. In post-mortem work the diagnosis resolved itself practically into myocarditis and chronic myocarditis. These examinations merely show the scar tissue that is left.

Dr. H. B. Anderson said it occurred to him that Dr. Klotz's conception of the relation between cardiac, renal, and vascular conditions differed from that ordinarily held. He furnished a factor which correlated the disease in these three different conditions and this factor was the infection. He understood from Dr. Klotz's paper that the infection mentioned served as a type of the condition which would give rise to these pathological processes simultaneously in the three different tissues mentioned. This differed from the usual idea that the condition in the heart was secondary to that in the kidney or the arterial condition secondary to the rise in blood pressure. He did not gather from the doctor's paper that he excluded the mechanical factors of increased blood pressure when such was present but rather asserted that this is not a necessary part of what is ordinarily spoken of as arteriosclerosis. He did not mention the influence that various intoxi-

cations (such as were referred to by Dr. Henderson) might have, for example nicotine, adrenalin, or the factors of overwork, worry and nervous strain. Another point that occurred to him was that referred to by Dr. Dwyer, namely, and that in rheumatic infections as seen afterwards at the autopsies the clinical picture presented was not that of arteriosclerosis as ordinarily seen. From the description of the pathological process as given by Dr. Klotz the lesions were more of a focal nature in the different organs, particularly the kidneys or heart; he did not remember whether he mentioned also the blood pressure.

Dr. Duncan Graham asked Dr. Klotz whether he considered the streptococcus viridans the cause of rheumatism, secondly, whether so-called Aschoff bodies are specific for acute rheumatism? Is it to be understood from Dr. Klotz's experimental work that he found Aschoff bodies in the heart lesions after injections of the streptococcus viridans? Finally had Dr. Klotz examined any joints in animals that had been injected with any of the varieties of the streptococcus?

Dr. George Ross said there were one or two especially interesting points brought out in this paper, first the association of certain streptococci with the production of virus causing vascular inflammation. He had shown that the streptococcus viridans, and others of that group, were closely associated and that these organisms call forth the overproduction of fibrous tissue. In the chronic arthritides, such as rheumatoid arthritis and osteo-arthritis, there is a production of fibrous tissue and these conditions are believed by many to be the result of continued irritation kept up by infections of certain parts of the body by organisms of the streptococcus viridans type. He would like to ask whether the members of this group of organisms may not all have a selective affinity for fibrous tissue. An interesting point made was that one dose of poison that called forth a non-suppurative inflammation was not sufficient to cause damage, and therefore many repeated doses were required to produce mischief. It is known that streptococcus viridans is a cause of chronic alveolar abscess in pyorrhœa, might that not be an important factor resulting in repeated infection of the blood stream and bringing about perivascular inflammation such as so often arises in heart, blood vessels, and kidneys?

Dr. Hunter asked for information as to the relationship of chronic suppurative processes in the ear and various sinuses of the face, with conditions such as Dr. Klotz had mentioned.

Dr. Paul Scott continuing the discussion recalled the state-

ment of Sir James Paget that nothing could be considered true which could not be proved clinically, and what could be demonstrated clinically required no further demonstration. He referred to a case that had come under his notice in which long continued infection, in a patient of forty-two years of age, had resulted in definite evidence of the three conditions, arteriosclerosis, hypertrophy of the heart, and sclerosis of the kidney. Ten years ago the woman, aged thirty-two, had mitral stenosis with the usual symptoms, resulting in lack of compensation. She was treated by rest and digitalis with no improvement. Later she developed a malignant endocarditis. In connexion with this endocarditis she had two or three septic infarctions of the kidneys. Dr. McPhedran saw the case, and had no doubt in regard to the prognosis, a fatal termination. She did not die, however, and after the recovery the mitral condition gave very little trouble. It seemed to Dr. Scott that the severe inflammation had resulted in relief to the mitral valve. After that she was able to do her own housework, became married again and is once more a widow. For upwards of ten years after this illness, the patient was comparatively strong and healthy. She is now forty-three years of age and is failing in health again, blood pressure 175, heart extended two finger breadths outside the nipple line. The quantity of urine passed daily is large, with low specific gravity, and there is abundance of albumen present, also casts. Of late she has developed symptoms of uræmia, and once has had a uræmic convulsion. The evidence is clear that long continued infection was followed by the condition described by Dr. Klotz. He asked whether there are early symptoms whereby an infection such as was present in this case could be recognized clinically, that one might suspect such a condition of infection apart from the acute rheumatic attacks.

Professor McPhedran corroborated Dr. Scott's report of this case. He asked whether Dr. Klotz would account for localization of arteriosclerosis by infective processes in all cases. Dr. McPhedran recently saw a man of seventy years of age with a blood pressure of 180. This pressure was due to spasm. The pressure was but temporary as it became low again. The man is suffering from cardiosclerosis, and there is no evidence of disease of the kidneys. Some of his arteries are quite thickened but his whole arterial system is not in this condition.

In closing the discussion Dr. Klotz said he would have to apologize for starting over again. He felt when he started into the subject that it would be very difficult to attempt to cover the field of

these three organs in the course of an evening's discussion. That was one reason why he wished not to be misunderstood as dealing with heart disease, kidney disease, or arteriosclerosis, but rather as dealing with the triple alliance, the three diseases occurring together. It had been his wish merely to show a correlation between the factors that bring about common lesions in the three organs, heart, kidneys, and arteries. He had not dealt with kidney disease of the tubular type, with that type where the tubules were destroyed by auto-intoxication or by various drugs and absorptions from the intestinal tract, or by other varieties of conditions named in the text-books. In regard to the point of auto-intoxication brought up by Dr. Henderson he did not wish to discount the fact of various agents striking the kidney and possibly affecting the arteries, but which were not definitely related as factors in the triple alliance. He therefore would not go into the various types of kidney disease brought up but would confine his reply to the subject under discussion. Replying to Dr. Dwyer's statement that the speaker had not brought out his attitude to the so-called rheumatic fever and the allied form spoken of sometimes as muscular rheumatism and his question whether acute articular or acute rheumatic fever left any marks upon the organ so that at autopsies the findings would show that such had occurred in early life, Dr. Klotz said acute rheumatic fever leaves its marks, and that these can be seen at the autopsy. In this the pathologist might be wrong in some cases, but right in the majority. Last year he had searched at autopsies for such lesions in acute rheumatic fever and allied diseases, and had found these marks on the structural tissues of the heart, particularly on that tissue associated with nutrition. Investigating this matter further he found that in the majority of these cases there were marks on the ascending aorta, also in the arch, less frequently on the descending aorta and still less frequently on the abdominal aorta; but they were not commonly present in the branching arteries to the viscera.

Dr. Goldie made a point which Dr. Klotz had desired to bring out his original remarks, namely, that lesions in the different systems are found at autopsies and yet no clinical findings corresponding to these had been noted in the history of these cases. Some of these manifestations might have been noted if attention had been directed more closely toward them, but in the ordinary course, attention is directed to the more actively diseased organ, the lesser clinical manifestations thereby escaping notice. Not uncommonly in kidney disease in its early stage the inflammatory process is

slight and clinical manifestations are wanting, or else so slight that they are unnoticed and yet this is the beginning of a progression to more serious trouble. With regard to recurrence every one is struck with the fact that this type of infection is apt to recur; there is no immunity produced from a single attack and it would seem that resistance becomes actually less. With regard to the mechanical factors that may influence the ultimate results, he said that when the process becomes established, if nutrition allows it, the heart will hypertrophy.

In reply to Dr. Anderson, Dr. Klotz had found that in diseases of the triple alliance an examination of the heart muscle did not show an increase of muscular tissue, similar in quality to that of the natural organ. There was in addition to the hypertrophy evidence of disease—a diseased process similar to sclerosis. Regarding auto-intoxication, nicotine poisoning, etc., as brought up by Dr. Anderson, he said this was another story entirely. With certain drugs arterial disease can be induced with the sequelæ such as increased blood pressure and hypertrophy of the heart, for example the administration of adrenalin will so result.

The local distribution of arteriosclerosis brought up the big problem as to the reason for such distribution. This might be studied by itself, and arteriosclerosis in one particular system has its own cause for its presence there. An arteriosclerosis of the right arm more than in the left arm, is commonly found in right handed persons. This is induced by the greater amount done by that arm. Recently there had occurred a case of unilateral arteriosclerosis of the pulmonary system in which one lung was completely collapsed and functionless and free from sclerosis, whereas the other lung was extremely sclerotic.

In reference to Dr. Graham's question as to the association of streptococcus viridans with acute rheumatic fever he would consider that members of the streptococcus viridans group were the cause rather than a single streptococcus rheumaticus. The effort to put the responsibility for this disease on a single organism had not succeeded, and it had been shown by many that such a single organism did not exist. If the streptococcus viridans is taken away from acute rheumatic fever there is not much left. If this fever represents a disease induced by another organism, the lesions resulting from that disease are very mild in comparison with those induced by this viridans streptococcus. There is no question of the association of these forms of streptococci and the inflammatory lesions found in acute rheumatic fever. These organisms have

been isolated from the heart, the kidneys, and the urine, and during the attack they are present in the blood. In regard to Aschoff bodies in the heart they are present in certain inflammatory conditions. They are found in acute rheumatic fever, acute articular rheumatism, muscular rheumatism, and rheumatoid affections. Here the lesion in the heart is focal and develops in the vicinity of the nutrient vessels of the myocardium. Very often from the myocardial picture alone a diagnosis of a rheumatic affection could be made. Dr. Klotz showed some drawings and pictures of these Aschoff bodies.

In answer to Dr. Hunter's question, Dr. Klotz said that these chronic suppurative processes in the sinuses and other cavities may have or may not have a relationship to the subject of discussion. In other words suppose any chronic condition is present such as chronic tonsilitis, such an affection may be caused by many different kinds of organisms. Here in each variety of infection the lesion is not similar pathologically, and yet clinically it is tonsilitis. In this instance we are dealing with an ulceration in the deep crypts. These little ulcers are the ports of entry to the body for the different organisms that may be present.

Dr. Klotz in conclusion thanked the Fellows for this opportunity to appear before the Toronto Academy of Medicine. It was his first appearance and he appreciated very much the invitation to be present. He felt it an honour to be invited to take part in this discussion and this more particularly as Toronto was the home of his Alma Mater.

The president of the Academy, Dr. Herbert Hamilton, presented the thanks of the Fellows to Dr. Klotz for his excellent paper, and his most illuminating reply in his discussion. It was a pleasure indeed to convey to him the thanks of the Academy.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE third regular meeting of the society was held Friday, November 7th, 1913, Dr. D. F. Gurd, president, in the chair.

LIVING CASE: Vincent's angina, Dr. Kenneth Cameron.

The case which I bring before you to-night is of much interest on account of the rarity of the disease, the unusual situation of the growth, and its occurrence in a person of this age. Vincent's

angina is characterised by brownish or greyish ulcero-membranous patches on the mucous membrane of the throat, usually the tonsils and the pillars of the fauces, in which are found two characteristic organisms, a long fusiform bacillus with pointed ends and a spirillum. The man, fifty-five years of age, came to the surgical out-door department of the Montreal General Hospital on October 28th, stating that for the past two weeks he had noticed a small growth on the roof of his mouth. Upon examination, a patch about the size of a ten cent piece was seen situated on the right side of the roof of the mouth in a line with the first bicuspid tooth. It was of a dirty greyish brown colour, of a soft velvety feel, not at all indurated, extending well above the healthy mucous membrane, from which it was separated by a deep fissure. No other spots were seen on the mouth or fauces. The teeth were decayed and the odour of the breath was extremely fœtid, quite unlike anything I had ever before experienced. A swab was sent to the pathological laboratory for examination but was not sufficient to form the basis of a diagnosis. Three days later the membrane had spread over the whole of the hard palate, part of the soft, on the right side, and through a gap between the teeth of the buccal mucous membrane. Part of the growth was scraped away, leaving a raw bleeding surface. In this material numbers of the characteristic bacilli of Vincent's angina were found. Three days later the membrane had spread over the whole of the other side of the roof of the mouth and through a gap between the teeth on that side also, to the buccal mucous membrane. The place from where the patch had been curetted was again completely covered. Little active treatment has been carried out, so that the members of the society might have an opportunity of seeing this curious condition. The treatment is the local application of salvarsan, or the application of oxygen in the form of a mouth wash of peroxide of hydrogen. (N.B.—Subsequently, the membrane rapidly disappeared under the above treatment.)

DISCUSSION: Dr. Fraser B. Gurd: The organism of Vincent's angina has been the subject of a great deal of research during the past two or three years, and, even though I seem to be didactic in the matter, I think it would be of interest to mention one or two of the facts that, apparently, have been established regarding the organism. A great deal of work has been done in Chicago by Dr. Hektoen and by Ruth Tunnicliffe and Dick. A certain amount of work has also been done by some of the Germans. These observers have established that the fusiform bacillus is the same organism as the spirillum. The organism can be cultivated with comparative ease under

strictly anærobic conditions in any media containing uncoagulated albumin. At the end of twenty-four hours the culture is made up entirely of bacilli, at the end of forty-eight hours of equal numbers of bacilli and spirochetes, and at the end of four or five days, and for several weeks, the culture is almost entirely spirochetes. In early lesions, the bacilli are much more frequently found; in older lesions the spirochetes, apparently, in almost pure culture. These investigators have also worked out this bacillary organism, the bacillus fusiformis, in other diseases than those of the mouth; Dick in empyema, gangrene of the lung, and Ruth Tunnicliffe in generalised septicæmia with thrombosis in vessels in various parts of the body where this culture was obtained. A similar organism was obtained from normal throats. It has been found impossible to infect animals with the simple injection, but by repeated injection the animals do succumb and their bodies are filled in the same way as by the *B. ærogenes*.

CASE REPORT: Pellagra, by Dr. H. A. Lafleur.

DISCUSSION: Dr. Fraser B. Gurd: I have with me a copy of a photograph which Dr. C. C. Bass, of New Orleans, was good enough to give me, and which will show the association of the lesion with the action of the sun. A fairly pronounced dermatitis of both hands is seen, but where the rings were worn the skin is perfectly normal. The impression in the south is that, not only does the patient suffer from a sunlight dermatitis, but the general constitutional condition is altered for the worse by exposure to sunlight or even diffuse daylight, and their patients are always happier by being kept in the dark. It does seem as if there were some substance in the body which responded to light in some injurious way. That the dermatitis is a sun dermatitis, I believe, is proven. That there is always some underlying feature associated with pellagra which predisposes the individual to the action of sunlight, in a way which the normal individual is not, seems probable.

Dr. J. G. Adami: I would like to call Dr. Lafleur's attention to the fact that the statement has been made that apparently the first recorded case of pellagra in North America is to be found in the mortality tables of the Province of Quebec many years ago. So far, I believe, it is unknown who made this diagnosis, or what were the facts of the case. It is curious, though, that it should have been there.

PATHOLOGICAL SPECIMENS : Dr. E. J. Mullally.

1. Unusual condition of a rib. Removed from a child of five years who contracted tonsillitis, which subsided after one week,

about the first of the present year. Two weeks later severe pain developed in chest, and in another week a swelling was noticed, red and fluctuating. It was incised and pus came away. The wound refused to heal and a sinus persisted for several months. The case was sent into hospital, the sinus cut down, and the rib removed. The rib shows a long sequestrum.

2. Fracture of the head of the radius. A male, aged nineteen fell eight or ten feet with both hands outspread, a fracture of the clavicle and severe injury to right elbow resulting. In hospital there was much doubt as to the exact condition in the elbow; it was cut down upon for the purpose of wiring a fracture and this unusual condition was found at the extreme end of the radius where it comes in contact with the humerus. The head of the radius is divided into three unequal segments; the two smaller pieces were very difficult to find, but the larger one remained in contact with the radius. The specimen shows what may often be the result of neglected and untreated conditions of the elbow joint; it is probable that an ankylosis might have developed here.

3. Epithelioma of lower jaw, or rather of mucous membrane attached to jaw. Removed at operation from a man seventy years of age. At about the age of sixty-seven, he had all his lower teeth removed and a plate substituted; it was loose and in time produced an irritation. At the end of eighteen months a swelling developed and after three years he came here for treatment. The thing was now a large malignant growth, ulcerating, and very foul-smelling; he begged for relief. The lower jaw was removed and shows this large epithelioma. It illustrates the well-known fact that constant irritation will induce malignant change in almost any situation.

4. Pyloric end of stomach removed from a woman aged sixty-four, who had suffered, off and on, from symptoms of stomach trouble for a number of years. Her cervix was removed for carcinoma three years ago. The stomach symptoms consisted of vague indefinite pains, and attacks of nausea but no vomiting. These attacks have increased in severity since September. In addition to this she suffered from what she called "bloated attacks," the stomach swelling up. When the stomach was washed out, fragments of meals taken a few days previously were removed. On the supposition that the condition was malignant, the stomach was opened and a hard mass found at the pylorus. It was removed and sections were examined, but did not prove to be carcinomatous; there is just a thickened layer of submucous tissue, fibrotic in nature, which gives one the impression of the condition known as linitis plastica,

or fibrosis of the stomach. This condition has been much written about and much discussed, and there has been great difference of opinion about it. There are at least two distinct forms, the localized and the general, and a form that is malignant and one that is non-malignant.

5. Thyroid, removed from an imbecile fifty years old on account of its mechanical effect of producing dyspnoea. The specimen shows two distinct things,—at the upper portion, there is a small area which has a foetal adenoma microscopic appearance and a larger area showing under the microscope a myxo-fibro-adenomatous condition. The association of an enlarged thyroid with pronounced mental disorder suggests the possibility of some connexion between the conditions. However, the history of the case is such as to exclude the possibility of the thyroid change as a causative factor, however much it may have contributed to increase the disturbed mental state. Another interesting feature of the specimen is the pronounced degenerative changes which are present; they account for the myxœdema changes which were noticed in the case.

PAPERS: 1. Mental defectives: history, etiology, signs and symptoms, diagnosis, prognosis, and treatment, by Dr. G. S. Mundie.

DISCUSSION: Dr. C. K. Russel: This discussion of Dr. Mundie's is very opportune, as I think that within the next year there will probably be an energetic movement on foot to make the people of Canada realise their responsibility in this matter. Mr. Alexander Johnston, in conversation with me, made the statement that it would be cheaper to the state to keep all feeble-minded women in the most expensive hotel in the city if in this way we could prevent them reproducing. I think it is time the people of Canada realised what mental deficiency really means in dollars and cents, to say nothing of the mental health of the community.

Dr. H. A. Sims: While agreeing absolutely with Dr. Mundie on the question of the treatment of these cases, I feel perhaps rather more optimistic in one respect, that is the question of environment. To adopt the view "that the environment of to-day is the heredity of to-morrow," except in so far as environment may influence the mating of defectives, we should have to accept the doctrine of the heredity of acquired characteristics, a rather drastic step it seems to me, especially in face of Weismann's mice. A point in favour of an optimistic view is the result of the segregation of the cretins of Aosta in Northern Italy. Up to 1890, this district was noted for its cretins who could be seen lining the roads and begging from the

passers-by at all times. In 1890 they were sexually segregated, no other prophylactic measure being taken, and by 1910 Jordan tells us "there were but four, one old cretin and three demi-cretins" in the whole district.

2. The clinical significance of blood pressure. Different instruments used; different factors involved in maintaining blood pressure; maximum or systolic pressure; minimum or diastolic pressure; errors, instrumental and personal; normal pressures; pressures in disease, their significance; methods employed in lowering pressure; conclusions. By Dr. J. Kaufmann.

DISCUSSION: Dr. F. R. Miller: I listened to Dr. Kaufmann's description of the manometers with great interest. Those used in physiology in experiments on animals have been greatly modified, first by Hürthle, who got away from the old mercurial manometer, and lately by Professor Frank, of Munich, who has still further improved the method. I think that it may, ultimately, be possible to combine some of these manometers with those of the sphygmomanometer.

Dr. W. S. Morrow: I am afraid that if I express my views some of the members will think that I am a terrible heretic. A favourite statement of mine is that the sphygmomanometer is responsible for more deaths than the guillotine, and I feel that this is the case. A great many men get hold of a sphygmomanometer, find that the blood pressure is up high, and immediately start to get it down. When they have succeeded the patient dies. I consider that the most valuable lesson to be got from Dr. Kaufmann's paper is that the blood pressure is a very complex thing. Dr. Kaufmann was unable to cover all the ground in half an hour for it would take a great many hours to cover it. Another thing is that any man who takes up the directions accompanying the various instruments and expects to get results therefrom, is doing a very wrong thing. If I find a high blood pressure, I know that something is wrong, but what is wrong my instrument does not tell me; I have to find it out by other means. I do not consider that a high pressure proves the heart is beating strongly; there may be a weak circulation; the brain may be suffering from insufficient circulation or very poor blood and may be sending out impulses to the vaso motor nerves to raise the pressure in the endeavour to get up enough blood to the brain. In cases where I have succeeded in getting pressure down it has generally been by treating heart failure. When a man finds a blood pressure up above normal he should examine the kidneys by all means possible. In the majority of cases, the kidneys are

diseased, and that is the first thing to correct. The next thing is to examine the heart very carefully and to try and determine whether it is working within its strength, or whether it is fatigued. You may find that the heart is not working easily within itself and needs supporting. Next we must go into the whole history of what the patient eats, drinks and does. Briefly, to find out the cause of high blood pressure, we must make a thorough and exhaustive examination and make a careful diagnosis by exclusion.

The fourth regular meeting of the Society was held Friday evening, November 21st, 1913, Dr. D. F. Gurd, president, in the chair.

PATHOLOGICAL SPECIMEN: Thrombus, exhibited by Dr. L. H. McKim, from a woman aged thirty-four, who had been delivered of a still-born child. Puerperium normal, but three months afterwards she was taken ill with chills which occurred off and on for some time. Entered hospital, and died six months after delivery. Shortly after entering hospital she developed swelling of the legs with albumin and casts in urine; this disappeared about ten days before her death. The autopsy showed, as the immediate cause of death, a broncho-pneumonia. The specimen shows a thrombus which involves both the iliac veins. On the right side, the lumen is partially, and on the left side, completely blocked. The thrombus is attached solely at the bifurcation and about 4 cm. hangs free in the inferior vena cava. There is a small recent thrombus higher up. The top of the thrombus is round, and shows no sign of any portion having broken off. The heart and lungs showed no emboli.

CASE REPORT: Renal calculus, by Dr. J. M. Elder. The specimen was from a man aged thirty-seven, who came into the hospital last March, complaining of pain in the right side. He had pus in the urine; had never had chills or fever, but had pain sufficient to cause rather marked insomnia, sleeping only three hours at night. Fourteen years previously he had been run over by a wagon, and his right side hurt. An *x-ray* was taken which showed practically what is seen in the kidney to-night. The left kidney was perfectly normal. There are a great number of calculi, a whole chain in the lower pole extending almost down to the crest of the ilium, and some much larger stones in the upper pole. The patient was told that he had renal calculus, and was advised to have the stones removed. It was supposed that these stones were phosphatic as it did not seem possible to have so many on any

other supposition. Dr. Wilkins, however, who took the *x*-ray plates, said that the shadow was distinctly that of oxalates, and this proved to be the case. The patient went home to settle his affairs and returned on November 6th, when another skiagram was taken which showed exactly the same picture. Two intensified plates of the upper and lower poles were also taken which rendered the picture much clearer. Having demonstrated, without doubt, that the other kidney was competent, we operated. The operation presented no particular difficulty, except to the surgeon, as I had to resect the last rib in order to get out this large kidney. The wound healed by primary union, and he is going home to-morrow, with no temperature. He still has oxalates in his urine and I have warned him as to his diet. Dr. L. H. McKim described the specimen which had been hardened in formalin before being opened. It showed a large calculus in the pelvis, and a series of smaller calculi in the lower half. Dr. McKim also exhibited a test tube containing the fluid found in the interior of the kidney, which was quite pus-like in quality.

DISCUSSION: Dr. W. F. Hamilton: A few days ago I made the remark that the *x*-ray was responsible for some very wonderful diagnoses, little thinking that I should see the fact illustrated by this particular case. Dr. Wilkins is to be congratulated on his diagnosis. Another thing about the *x*-ray in this region is the demonstration of the presence of pus.

Dr. F. R. England: I would like to know why phosphates were not deposited upon that oxalate stone in the presence of pus and probably a certain amount of alkaline urine.

Dr. J. M. Elder: I have no explanation to offer at all as to the nature of the stone as I fully expected it to be phosphatic. Just why those stones are as clear and sharply cut oxalates as they are I do not know.

2. Pleuritic adhesion at site of external wound. Dr. J. M. Elder. Woman, aged sixty-six, had her breast amputated by Dr. Bazin on August 13th, the usual complete operation being done and everything taken away. She was in miserable health; without any septic reason, the flaps sloughed, and she had a large but healthy granulating sore, and there was some uncertainty as to how we could cover this up. Her recuperative power was very poor, skin grafting seemed hopeless, and plastic surgery did not give us much more hope. One day she was going about the ward as usual, feeling miserable, but without any temperature, when I noticed that she was having a severe rigor. She was put to bed at once

and the temperature suddenly shot up to 104°, and she was very ill for several days. At this time we thought she was suffering from broncho-pneumonia. She died on November 5th. She had from time to time complained of some pain in the right shoulder on moving the arm, but the operation seemed to explain this. However, the autopsy showed a septic (streptococcic) arthritis of the right shoulder. Inside the lungs were a great many nodules of secondary carcinoma, but that did not kill her; there was nothing septic in the lung itself. The source of sepsis was in the right shoulder joint, which had been missed entirely clinically. The interesting thing about this is that the question is raised, that in these extensive operations on the breast, where so much chest wall is uncovered, any sepsis occurring there may provoke a septic pleurisy. Can one get a direct extension pleuritis in this way? Time and again the condition has been met with, and it seems to me that in these cases we are always running the risk of septic pleuritis. You will see in the specimen that the adhesions corresponded exactly to the round ulcerated portion where the breast was. Since this case has come under my notice I have looked up three operations that I have done within the last two years, and I find that in all there is present a marked pleuritic friction though all had healed per primam. I merely raise this question, I do not know definitely that such is the result.

Dr. L. H. McKim: At the autopsy we found a large area devoid of skin, corresponding roughly to the area of the breast. There was a very thin epithelial covering but no evidence of any acute process going on there. There was a septic arthritis of the right shoulder joint. Numerous carcinoma nodules were found in the lungs, most numerous on the side opposite to the operation; the peribronchial glands were also extensively involved. With one hand in the pleural cavity one could accurately mark out the granulating area on the skin surface, by means of the pleuritic adhesions between the lung and the chest wall.

Dr. F. R. England: This is certainly an important case, and one which will arouse the interest of the surgeon. Dr. Elder suggests the possibility or even the likelihood of pleuritis occurring after an extensive operation for the removal of the breast. I can understand how a localized pleurisy might easily occur in a case where there was a large granulating wound which had become infected, but in a case where healing was by primary union it is not so easy to explain. I would like to ask Dr. Elder whether the metastases occurred in the lung itself or in the bronchial glands,

and also in what quadrant of the breast the original growth was situated as this has an important bearing on metastases occurring in the lung.

Dr. L. H. McKim: In answer to Dr. England I would say that both the peribronchial glands and the substance of the lung itself were involved; very much the larger foci were found in the lung; the peribronchial glands were infiltrated, but to a less extent. The larger foci were on the opposite side to that from which the breast was removed.

Dr. J. M. Elder: The quadrant (if you can divide the breast into quadrants) in which the growth was situated was the upper inner, the most dangerous situation, as the lymphatics run directly into the thorax. If the growth be in the other quadrants there is much more hope of removing the affected lymphatics with the tumour.

3. Intussusception of Meckel's diverticulum, by Dr. W. H. P. Hill. Dr. H. B. Cushing gave the history: The specimen was obtained from a boy three years of age who was sent into the Children's Memorial Hospital by Dr. Charles Gurd with a history of vomiting three days before admission. The child had had at least one similar attack some months before. On September 25th, present attack started without adequate cause with some abdominal pain; bowels moved freely; vomiting continued during next three days, and after first day no movement of bowels. On fourth day entered hospital; temperature 99°, pulse 100; no severe pain, but vomited at intervals anything taken by mouth. Enema given brought away flatus stained with fæces, but formed stool, also bloody mucus, and a history was given of passing similar mucus during the previous two days. Clinically the question was whether the boy had an intussusception or not. Against this was the fact that he had previous attacks from which he had spontaneously recovered; that after four days he was still in good condition; there was no abdominal distension, no mass palpable, no very severe pain apparently at any time, no tenesmus or straining, and enemas brought away flatus and a small amount of fæces. Since his condition was so good we decided to wait. On the fifth day he still vomited a little, but seemed much better; the following day he took full liquids, and had had no vomiting for twenty-four hours, but we could not get the bowels to move satisfactorily. On the afternoon of the sixth day he became suddenly worse, started vomiting again and enemas brought away no flatus, and, as there

was evidently a complete obstruction, Dr. Hill operated the following morning.

Dr. W. H. P. Hill: The abdomen showed signs of tenderness on the right side just below the liver; there was distinct resistance and under the anæsthetic a well defined mass was palpable. An incision was made opposite the tumour through the sheath of the right rectus, and we found the mass to be an intussusception. It was readily reduced. About two feet from the ileo-cæcal valve we discovered a second intussusception in a Meckel's diverticulum. The diverticulum and four inches of the bowel opposite to it were black and lustreless. This was resected and an end to end anastomosis done. The child made a good recovery. The specimen shows the mucous membrane of the diverticulum projecting into the bowel, and almost completely obstructing it. The serous coat has given way, evidently due to the extensive œdema that was present.

Dr. A. D. Blackader: This is one of those interesting cases in children which very often mislead the best of surgeons and I trust that Dr. Hill will report this case in full in one of our journals.

Dr. J. M. Elder: This is just another illustration of the well-known fact that one of the main causes of intussusception in a tumour. Here you had the Meckel's diverticulum which produced a tumour and the part of the bowel below tried to swallow the tumour. Cases of Meckel's diverticulum are not common, and intussusception of a Meckel's diverticulum is very uncommon.

Dr. A. H. Pirie: I would like to ask if the contents of the stomach were vomited.

Dr. H. B. Cushing: There was no definite fæcal vomiting, but green bile-stained fluid only.

Dr. F. S. Jackson: I would like to express my appreciation of the way in which Dr. Hill did the operation; it was done rapidly, and there were absolutely no untoward results.

PAPER: Treatment of heart failure, by Dr. W. S. Morrow: In his paper Dr. Morrow touched on the following points: Functional diagnosis—cardiac insufficiency; failure of contractility and tonicity, and their treatment; treatment of the cause; congenital defect, rheumatism, syphilis, influenza, nephritis, arterial hypertension, obesity, arrhythmia, disturbances of excitability—causes of functional disorders—organic, toxic, physical strain, sexual, emotional, thyroid, digestive, neurasthenia.

DISCUSSION: Dr. W. F. Hamilton: There are two points which I would like to discuss. First, the frequent difficulty in

separating the contractility failure from the tonicity failure causes. As a matter of fact I do not think they can be separated as readily as would appear from Dr. Morrow's remarks. It seems to me that where there is a failure of the one there is in some degree a failure of the other. At all events the failure of tonicity can scarcely be considered apart from the failure of contractility, and contractility failure leads in most cases to tonicity failure. One cannot doubt, however, that there are cases in which death ensues where no failure of tonicity can be demonstrated after death. But I am speaking of a larger class of heart failure cases which passed through the phases of failure of contractility and failure of tonicity, and I maintain that the recognition of each failure is not always easy. The features blend and the sharpness of definition is wanting. I would recall to the minds of several in this meeting the story of a patient who was shown here some years ago. A striking sign, you may remember, was a loud murmur, audible many feet away from the chest. The patient was the subject of both aortic and mitral disease, often complaining of thoracic and arm pain. His heart was much enlarged, both to the right and left. Gradually he became œdematous; the liver enlarged and cyanosis became marked. As these changes were recognized his distress lessened, and his pain ceased entirely; the contractility failed, the tonicity failed, and comparative comfort was enjoyed. This case is but one illustrating a well recognized change in cardiac failure, and one also, I take it, that illustrates my contention that the path to failure of tonicity is through failure of contractility. This path is sometimes short and sometimes long. The second point is the success following the use of adrenalin. Dr. Morrow's results are nothing short of phenomenal. I have never seen such cases nor do I recall any instance of like success. The method of administering the remedy by the mouth is rather exceptional, I think. Finally, I had hoped to hear of that form of cardiac failure so often met with in general practice, the failure found in acute infections. This is a most important matter to all of us who treat pneumonia, typhoid, diphtheria, etc. These cases illustrate an urgency even greater than those due to tobacco, coffee, and other heart poisons, and it is very desirable to have more light regarding the remedies useful in such emergency.

Dr. W. S. Morrow: The first question raised by Dr. Hamilton, whether failure of contractility and tonicity were perhaps practically different stages of one disease or disturbance, is one which I cannot altogether sanction; and he himself has supplied facts to refute it

in the case he mentioned, where the symptoms of distress were probably due to failure of contractility, whereas, when a leakage developed, this passed away and the man showed circulatory disturbances with veins distended, suggesting failure of tonicity. It is a very common experience that a patient, at a certain stage, will show anginal symptoms and cardiac asthma, the valves being competent; then they will give way and leakage will occur, the pressure in the ventricles will fall and the symptoms of failure of contractility disappear. MacKenzie explains the symptoms attending a failure of contractility by reminding us that in a hollow viscus we get colic when the muscle is contracting against too great resistance. In renal or hepatic colic the pain is not due to the injury to the mucous membrane, it is not sufficiently sensitive, it is rather due to the contraction of the muscles against resistance, which for some reason is characteristic of hollow viscera. The same with the heart, and here we recognize it as an anginal attack, and it often shows itself objectively in the variation of the pulse, known as pulsus alternans. It has been noted that when the mitral valves become incompetent and leakage occurs, the patient may get worse, but his pains will disappear; in other words the pressure is no longer sufficient to produce this colic; but we have other symptoms due to the back leakage and these may lead to kidney congestion and ultimately to death. I think there is a distinction in these two conditions even if they follow one another, and we may see it in the remedies that do good. Where we have the symptoms of angina, digitalis as a rule does not do good; whereas in the case of a big dilated heart the probability is on the whole that digitalis will do good. Sometimes, I admit, the two conditions are combined, as in a heart with leaking valves and perhaps coronary sclerosis.

The next point was the question of adrenalin, I can only say with reference to it that I have been using it for ten or twelve years in hundreds of cases and have had a great number of successes; some in fact who seemed almost moribund have recovered. I have been disappointed with the action of adrenalin in many cases but in a great number, including cases of failure of contractility and hyperthyroidism, I have noted beneficial action. I remember one case in particular, that of an old woman, with enlarged thyroid and dilated heart, where the heart came down considerably in size and there was much improvement after a month's treatment with suprarenal tablets.

As to the condition of the heart in the acute infections, I omitted this because my paper was based, with few exceptions,

upon my own experience, and I have had very little experience with the acute infections compared to many of the hospital men, certainly not enough to take up the question from this point. I still maintain that contractility and tonicity ought to be separated, that they are not identical; one is shown by pain due to contraction against resistance, the other causes a combination of congestive phenomena due to backward leakage and the circulation not being carried on properly, and they require different treatment.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

A SPECIAL meeting of the society was held in the society's rooms, on Friday afternoon, December 5th, at five o'clock, Dr. D. F. Gurd in the chair. The society was addressed by Dr. Harvey Cushing, professor of surgery in Harvard University, on "A report on a series of ganglion operations for trigeminal neuralgia."

KENT COUNTY HEALTH OFFICERS' ASSOCIATION

At a meeting held at Chatham, on December 2nd, the Kent County Health Officers' Association was formed. The objects of the association are to promote the general health of the county and to study the sanitation. The president is Dr. C. R. Charteris, Chatham; the vice-president is Dr. Hanks, of Blenheim, and Dr. Reid, of Merlin, is the secretary.

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The Canadian Medical Association

Annual Meeting, 1914, St. John, N.B., July 7th, 8th, 9th and 10th

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Single Copies, 50c.

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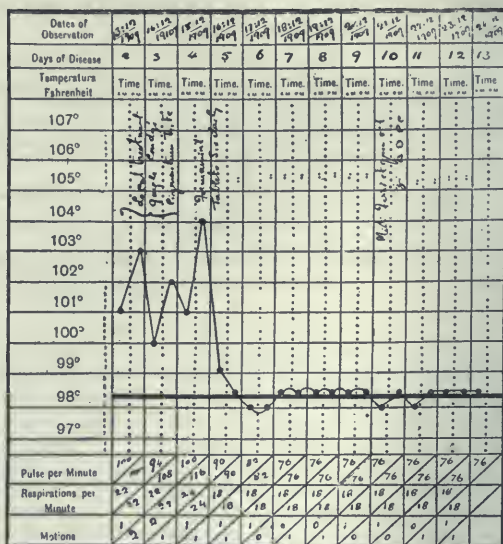
The Value of Formamint in Reducing the Temperature of Tonsillitis.

From the "Medical Times,"
Sept. 24th, 1910.

CASE II.

Suppuration of both Tonsils.

"This was of a very severe character, there being several foci of suppuration on the left tonsil, and one large one on the right. Local applications of warm fomentations, warm gargles of lotion, and painting the tonsils and fauces with pigmentum ferri perchloridi had absolutely no effect. Formamint rode over the whole difficulty immediately, and a morbid pathological condition was soon converted to a healthy physiological state."



The rapid rise in temperature which is so characteristic of Tonsillitis, and often disturbs the peace of mind of the patient's relatives by causing a more or less marked delirium, yields rapidly to the exhibition of Formamint Wulfig, as the above chart, selected from several published in the "Medical Times," strikingly demonstrates.

In another case, a patient with temperature of 103° F. at 4 p.m., bad headache, huskiness of voice, who was only able to swallow a few ounces of milk with pain and difficulty, was ordered two Formamint Tablets four times a day. At 9 p.m. the temperature had dropped to 99° F., the huskiness and headache had gone; he drank 12 ounces of milk without any discomfort, and stated that he was feeling fine. By next morning his temperature was normal, the size of the tonsils and congestion of the fauces had considerably diminished, and he made an uninterrupted and rapid recovery."

Similar results have been reported by many other observers, notably Dr. H. Schoppler, in a German Military Hospital, who published a remarkable set of cases in the "Reichs Medizinal Anzeiger." He proved that "when Formamint was given, the patients recovered on an average in four days, whereas, with gargles only, eight days are required to effect a cure." In many cases patients admitted to hospital on one day were discharged fit for service on the following day."

The rapid subsidence of the temperature was accompanied by the equally prompt disappearance of all other discomforts to which sufferers from Tonsillitis are subject.

The apparent antipyretic action of Formamint Wulfig is due to the germicidal action of the nascent formaldehyde evolved in the mouth when the tablets are sucked. The bacteria which cause the pyrexia are destroyed *in situ*, and the bacterial toxins being prevented from developing, the inflammatory action ceases."

The Canadian Medical Association Journal

VOL. IV.

MARCH, 1914

No. 3

HYPERTROPHY OF THE FAUCIAL TONSIL AND ITS TREATMENT

BY J. PRICE-BROWN, M.D.

Toronto

THE normal tonsil varies in size and appearance in different persons, and can only be considered as hypertrophied when large enough to interfere with respiration, deglutition or speech on the one hand; or to produce more or less painful attacks of inflammation on the other. It may be hypertrophied while still within the confines of the faucial pillars, or it may extend in severe cases all the way toward the medial line until it touches its fellow of the opposite side.

Anatomically the faucial tonsil may be considered as a large ductless gland situated in a deep fossa formed by the anterior and posterior pillars of the fauces in conjunction with the superior constrictor of the pharynx. It is composed of masses of lymphoid tissue united together and separated from each other by connective tissue elements. Its faucial surface is studded with crypts which extend into and through the tonsil, many of them as far as the capsule which encloses its outer surface. The inner surface of the tonsil, as well as the crypts, is composed of mucous membrane of the stratified or pavement epithelium type.

The arteries are from the lingual, pharyngeal and palatine. The nerves from the lingual and glosso-pharyngeal; and what has only recently been demonstrated, the lymphatic distribution in the tonsil is both afferent and efferent. The tonsil may be globular, or oval or divided into several distinct segments separated by deep fissures; and not infrequently a large part of the organ may be covered by the plica tonsillaris. So much for the brief anatomy.

Read at the Annual Meeting of the Canadian Medical Association, London, Ontario, June, 1913.

The physiology of the gland is much more complicated; and although still doubtful about its positive nature, it would seem reasonable to believe that the surgical treatment of the tonsil should be based upon something near a correct appreciation of its functions. It is now pretty generally conceded that it is supplied with both afferent and efferent lymph vessels. Von Lenart¹ has demonstrated that they communicate with other lymph nodes. We all know, as Swain emphasizes, that cauterization of the nose may be followed within twenty-four hours by an attack of acute lacunar tonsillitis, a purely secondary lymphatic process. Wright describes a functional relation of the tonsil to the teeth, claiming from practical observation that the enlargement of the faucial tonsil is due to changes in nutrition of the parts necessary to the proper eruption of the teeth. He reported a record of one hundred and fifty cases where operation on the tonsils had been deferred awaiting the eruption of the molars. Ashurst goes a step farther and calls the tonsils eliminating organs. The late E. L. Shurly² believed that the tonsils had an internal secretion of their own. Masini believes that they have an internal secretion similar to that of the suprarenal glands.

In support of the idea that the faucial tonsil has some function to perform and should not be ruthlessly sacrificed, comparative anatomy comes to our aid. The tonsil is not a vestige of the past, but a progressive organ. It exists among reptiles, passing in an ascending scale through animals, and as Packard informs us, reaching its highest development in man. Surely this is not an indication of degeneracy or uselessness.

Further still, Wilson³ tells us that, while the faucial tonsil is absent altogether in the rat, in many animals, especially in the carnivora, it is hidden away in the deeper tissues of the neck, but that it always retains an outlet into the fauces, although so well protected that it cannot be seen through the mouth. This is particularly illustrated in the lion. In his case the tonsil lies in an elliptical sac in the lateral pharyngeal wall, communicating with the pharynx by a comparatively small opening. The sac is so placed that in the movements of the pharynx the contents of lacunæ of the tonsil are expelled into the back of the mouth. This writer, basing his conclusions upon personal physiological and pathological research, believes that the faucial tonsil is not only one of the centres of development for lymphocytes, but that it also plays a rôle of importance which necessitates a close relation to the pharynx. What that rôle may be, we have no adequate knowledge. It may

be of inestimable value to infant and child life; but in the passing of development may not be essential as maturity approaches.

This writer claims that, as the tonsil develops as an ingrowth of endothelium from the second branchial pouch, its origin is in line with that of the thymus and the thyroid—the thymus originating in the third branchial pouch and the thyroid in the fourth—all three by the inbudding of the endothelium of the primitive pharynx—and that in some way not as yet discovered the three, possessing a similar genesis, may each possess a corresponding function.

In studying the physiology of this organ Jonathan Wright⁶ has made many experiments and added much to our knowledge. He proved that when carmine powder and bacteria were introduced into the crypts of the healthy tonsil the inert powder passed in great abundance beneath the epithelium and into the intercellular spaces; while the bacteria, owing to some bio-chemical property which they possess, remained in the surface of the crypts. Again, when the powder and bacteria were placed on the surface of the tonsil, the former could be easily washed away, while the latter were much more difficult to remove. A species of affinity seemed to exist between the bacteria and the mucous membrane. Is it not possible that the mucous cells, as phagocytes, were waiting their opportunity to destroy the invading forces of bacteria just as they do in the nose?

Even the extent to which diseased tonsils may become avenues of infection is still debatable ground. While many consider them as direct portals of entry for tubercle bacilli, Wright and Walsham after careful examination of suspicious cases failed to locate the process within the tonsil.

We all know that Mackenzie claims that the tonsil is an organ in the animal economy whose existence and function should be respected, and although in childhood it may often become enlarged and require to be reduced in size, that it is very rarely indeed that it becomes so seriously diseased as to require complete removal. Hence he believes that early treatment may often be required, either medical or surgical, but rarely radical.

Hudson Makuen⁴ believes that removal of the capsule often results in formation of adhesions between the pillars. He says that after tonsillectomy "we rarely if ever see the palatal half arches and the fossa presenting themselves in all their original beauty of structure and outline, for we always have a break in the mucous membrane to be filled in with granulation tissue, and this, transformed into cicatricial tissue, binds the pillars together and inter-

feres with their motility and flexibility in the production of the voice."

Let us now consider the symptoms of hypertrophy as they appear in children. First, they are mouth breathers. Besides the obvious enlargement of the tonsils, there may be present considerable nasal catarrh, that is a muco-purulent discharge may be found in the nasal cavities, post-pharynx and around about the enlarged tonsil. This discharge, it may be impossible for the little patient to void. A close examination, however, will not reveal any ulceration upon the surface of the tonsil, neither any deposit other than the muco-pus already mentioned which can be readily wiped away. The condition is one mainly of naso-pharyngeal obstruction, due partly to the additional presence of adenoids, a subject outside the province of this paper. Together with these symptoms there is more or less occasional soreness.

If allowed to continue unrelieved other symptoms develop. The cervical glands may enlarge. Middle ear suppuration may occur, attacks of acute tonsillitis may succeed each other, cheesy deposits may form within the crypts and peritonsillar abscess may supervene. Besides all these the continued open mouth and diminished vitality render the little patient more susceptible to an attack from any of the acute exanthematous diseases which at the time may be prevalent.

Upon these points all clinicians agree; also upon the inadequacy of medical treatment. The differences of opinion rest upon the character of the surgical treatment required; and the final prognosis based upon that treatment. One eminent class of clinicians claim that there should be a due discrimination in the selection and treatment of cases; that the conditions of hypertrophy and hyperplasia stand widely apart and that they call for different methods of treatment. They claim that the functions of the tonsil during childhood demand recognition; while absence of function during adult life removes the obligation. They maintain that the hypertrophy of the tonsil during childhood is almost entirely composed of lymphoid tissue; that it is not a disease in itself; but an overgrowth of an organ too intent upon the performance of its duty. Whereas, as the years advance, if normal shrinkage does not occur, hyperplasia of the connective tissue type takes the place of the lymphoid hypertrophy, producing an overgrowth of a denser and harder character and requiring a method of treatment differing from that of the condition which it has displaced.

Another equally eminent class of clinicians claim that whenever a tonsil is hypertrophied to such an extent as to produce clini-

cal symptoms and distress to the patient, whether in an infant, growing child or adult, it is diseased; and that the proper policy to pursue in order to relieve the symptoms and prevent the occurrence of other evils which its continued presence might produce is to remove the offending tonsil in its entirety together with the capsule which encloses its deeper surface. In other words to do a complete tonsillectomy. In support of the position they claim that when the organ is only partly removed recurrence of the symptoms frequently takes place; and that if any portion of the tonsil is left, it is just as liable as ever to become an avenue of systemic infection.

In consequence of this diversity of opinion upon the pathological significance of tonsillar overgrowths the surgical operations at present practised may be divided into tonsillotomy, partial tonsillectomy, and complete tonsillectomy.

The first is the one that has been followed in a more or less efficient manner all over the world by general surgeons and specialists, in hundreds of thousands of cases during the last half century. Until within the last few years it has been considered, by a large majority of laryngologists, as good practice, the results following it being generally satisfactory. Even Ballinger, a most staunch advocate of complete tonsillectomy in children as well as in adults, states in the late edition of his text-book that he has done it in hundreds of cases with very satisfactory results. Swain, Wilson, Simpson, Getchell, Mackenzie, Kyle, all favour the partial removal in children. Moure,⁵ of Bordeaux, in his admirable work upon pharynx and larynx published four years ago, gives tonsillotomy first place, while tonsillectomy he does not even mention.

Judging from my own personal experience, covering special throat work for a quarter of a century, I think there are two main reasons why relief by tonsillotomy has fallen so much from grace; the one, the faulty manner in which the operation was formerly done; the other, the fact that although hypertrophy of the faucial tonsils is usually accompanied by the presence of adenoids, the latter, in many cases were not removed at all.

To do tonsillotomy correctly, all the projecting portion of the tonsil should be removed. That is all the upper portion of the tonsil from the supra-tonsillar fossa downwards. The guillotine should be adjusted to seize and remove the greater part of the gland penetrating between the anterior and posterior pillars, leaving only the part in immediate relation to the capsule above and the base of the gland below. That is, the hypertrophied tonsil should be removed in such a manner as to liberate the hitherto trammelled muscles, the palato-glossus and the palato-pharyngeus. By this

means the unoffending capsule and the base of the tonsil would be left *in situ*, the latter being almost if not quite the normal size.

In some cases owing to the uneven surface of the tonsil, the face of it being fissured, or to the fact that the instrument had failed to do the operation as fully as might be desired, I do what Russ Wood calls an evisceration of the tonsil. That is, while the child is still under the influence of the anæsthetic, I pass the forefinger of whichever hand is the more convenient into the mouth and break up the remaining part or parts of the tonsil, commencing in the supra-tonsillar fossa and working downwards, taking care to confine the evisceration absolutely within the faucial pillars. It is not a difficult thing to accomplish. The parts are all lymphoid and spongy; and the after-effects, so far as fever and irritation are concerned, are practically nil. The difference between my operation and that of Russ Wood is that while he breaks up the whole tissue with the finger, without any regard to the capsule, I excise first what I can with the guillotine, and then by careful use of the finger remove as much of the balance as seems desirable. In the very large number of cases in which I have done the combined operation in children I have very rarely indeed seen any further throat trouble arise from the piece of the retained tonsil.

The former practice of simply clipping a piece of tonsil internal to the pillars, and allowing the great body of the hypertrophied organ to remain, irritating the pillars, was a mistake; and to expect good results from partial removal when the unrelieved nasopharynx compelled continued mouth breathing was equally an error. Recurring attacks of tonsillar inflammation could scarcely fail to appear; with the result that an operation eminently successful when properly done has been discarded on account of failures readily accounted for and a radical operation, the enucleation of the whole organ, substituted in its place.

If we grant that an operation of partial removal will produce an adequate result at the time, a position assumed by many leading laryngologists, then the future of the child should be safe. It is agreed to by all that in early life the tonsil should commence to shrink away. Consequently after operation the portion of tonsil remaining, having its race half run, cannot assume again the virile power that it possessed at the commencement of the hypertrophy, but must eventually shrink away.

In support of this pathological assumption, let me briefly note the history of a case in point. A boy of five years was referred for treatment to relieve complete mouth breathing. I found the right tonsil very large, almost extending to the medium line, the left

tonsil normal in size, the nasopharynx filled with adenoids, I removed the adenoids digitally and the right tonsil with Mathieu's guillotine. The boy had an immediate recovery. Two years later he was brought back to have the left tonsil removed. It had grown to an enormous size, while the remaining portion of the right one had remained stationary. A similar operation was done on the left side. There was never any noticeable enlargement afterwards, and at the age of thirteen the tonsils had almost disappeared.

The second method of operation is called "partial tonsillec-tomy" to distinguish it from the commonly used term "complete tonsillectomy," that is, other methods by which the greater part of the tonsil may be taken away. It may be done by knife, scissors, electro-cautery, punch forceps or by other methods or a combination of several at the one time.

It is applicable especially to adult cases in which the hypertrophy is of the hyperplastic character. Myles claims, and also does Makuen, that these conditions can be remedied by taking out the tonsil without removing the capsule. There are many conditions in which complete enucleation may not be necessary. I have frequently seen cases in adults in which the whole trouble seemed to be caused by the presence of an extended plica over the submerged tonsil. The excision of the plica, separating it carefully with a sharp knife from the faucial pillar, and the slitting of the tonsil in two or three places with the electro-cautery knife, have given complete relief. In other cases cutting off protruding portions by means of a double tenaculum and curved scissors, and cleaning out the crypts with pure carbolic acid on a thin cotton applicator have been attended with good results.

The last operation so popular now, enucleation with or without the capsule, is difficult or not difficult according to the manner in which it is done. There are many methods of operation and innumerable instruments have been devised for its accomplishment. It is usually easier to do it in the upright position. When I find the operation necessary, I usually adopt the following plan. First cleanse the throat with a carbolic alkaline spray. Then apply a 5 per cent. solution of cocaine by means of an applicator, followed by a 20 per cent. solution of cocaine added to a 10 per cent. of the solution of adrenalin. Sometimes, not always, I inject a few drops of 4 per cent. solution of cocaine beneath the mucuous membrane. I then seize the tonsil with a Vulsellum forceps, the one blade in the supra-tonsillar fossa, the other at its base. Drawing it out and using a slightly curved, blunt-pointed knife, contrary to the usual method, I make my first incision through

the mucous membrane at the summit, slipping the knife gently in behind and above the tonsil, first on the front side then on the back. By continued and varied traction the tonsil is rolled out of its fossa, and by continuous cutting, taking care not to encroach upon either of the pillars, the excision is made from above downwards and inwards, and completed by the knife alone. In other cases after making the first upper cut and dissecting the tonsil from its attachment perhaps a third of the way down, the knife and Vulsellum forceps are removed and a tonsillotome passed deeply into position completes the operation.

If we consider that the capsule of the tonsil on its outer side is as essential to the existence of the tonsil as is the mucous membrane on its inner side, then a complete tonsillectomy must include the capsule—and it is this complete enucleation that is so widely advocated. Some men have gone so far as to say that every child should have its tonsils enucleated, simply as a preventative measure—a position too extreme, let us hope, ever to receive approval.

Now with regard to the capsule itself, I have never seen it advanced by any one that the capsule was diseased. Then why should we advocate the removal of normally healthy tissue? It seems to me that the question should not be, have we got the capsule out or have we not? It should be, even in adults and in hyperplastic cases, have we got the tonsil sufficiently out to relieve our patient? To remove the diseased tissue? To restore to the faucial pillars their free normal action? If we have, it matters little whether the capsule has been removed in its entirety or not. The main points in doing the operation should be to save absolutely the pillars of the fauces, and to take equal care not to injure the superior constrictor of the pharynx upon which the capsule of the tonsil rests, points that are too frequently ignored by the complete tonsillectomist.

Although my paper is a rather lengthy one, I cannot refrain from briefly referring to the experiences of other men, and the statistics that have been gathered. Ballenger,⁶ while advocating and practising complete tonsillectomy in children and adults alike, says that "danger from hæmorrhage is perhaps the greatest objection to the operation." Crockett⁷ tells us that twelve deaths occurred in and about Boston in two years after removal of the tonsils by tonsillectomy besides a large number of serious hæmorrhages that would have been fatal unless checked by experienced hands. Richardson,¹⁰ in a very exhaustive paper read before the American Laryngological Association last year under the title,

"Complications of Tonsillectomy," reports that he has gathered the following facts from reported cases:—50 cases of serious hæmorrhage with 19 deaths; 2 cases of pulmonary infarct; 8 cases of general sepsis with 2 deaths; 2 cases of ether pneumonia with 1 death; 1 case of hysterical hemiplegia; 2 cases of status lymphaticus with 2 deaths; 2 cases of glottic spasm requiring tracheotomy; 3 cases of œdema of pharynx and glottis with 1 death; 2 cases of hyperpyrexia without any known cause, with 2 deaths; 1 case of gangrene and death; injuries to uvula and pillars very many.

Let me refer also to a report⁹ issued last year from the Throat Department of the Royal Infirmary of Edinburgh under charge of Logan Turner. The paper is entitled, "Results of Enucleation of the Faucial Tonsils, being observations on a series of fifty-three unselected cases." J. H. H. Pearson is the reporter. I shall only refer to the results of the operations. In all ninety-eight separate enucleations were done. To quote: "The final healing may occur in one of three ways. Firstly, by the flattening out of both faucial pillars against the lateral pharyngeal wall with more or less complete obliteration of the tonsillar fossa. In these cases there is usually marked vertical contraction at the site of operation, the soft palate passing almost directly on to the margin of the dorsum of the tongue posteriorly. The result was observed in forty-one of the ninety-eight operations.

"Secondly, one of the pillars may be left and the other become fused to its surface. In these cases also the tonsillar fossa is obliterated, but there is not so much vertical contraction. In thirty-six of the cases the anterior pillar was flattened out and just seen as a scar, running downwards and outwards on the anterior surface of the posterior pillar which was retained. In three cases the posterior pillar was similarly fused to the anterior. In two cases the posterior pillar was tacked to the posterior pharyngeal wall.

"Thirdly, the most satisfactory way in which final healing may occur is by retention of both pillars and fossa. This result was obtained in eighteen instances out of ninety-eight, in eleven of which there was practically no scarring to be seen; the palatine arches stood out in their original form and the fossa was deep. In the remaining seven the pillars did not stand out quite so prominently and the fossa was consequently shallower.

"Other points noted were: lowering of the soft palate on one or both sides in thirty-four cases out of the fifty-three operated on. Marked asymmetry of the palate with deviation of the uvula from the middle in nineteen out of fifty-three. Raising of the

palate from injury to the palato-glossus and palato-pharyngeus in two cases. Ridging of the mucosa of the posterior pharyngeal wall in one case. The presence of cicatricial bands with pockets in five cases."

If such results as these occur in the hands of accomplished specialists under the control of Logan Turner, one of the most distinguished laryngologists of the age, is it any wonder that J. N. MacKenzie,¹⁰ professor of laryngology of Johns Hopkins, should rise up in righteous criticism and declare that "This senseless, ruthless destruction of the tonsil is so far-reaching and enduring in its evil results that it is becoming each day a great menace to the public health, and therefore to the public safety."

DISCUSSION

Dr. Wishart, of Toronto, took exception to several points in the paper. The reference to the statistics of Turner appeared to place the operation in an unfavourable light, whereas if similar care were taken by any of the operators of large experience in following up the cases, and rigidly noting the bad as well as the good results, the records so made would differ little from those made in Edinburgh. The operations on the tonsils were really major in character when viewed from the point of possible after results, and should not be at any time in the hands of the general practitioner. Until the seriousness of the situation is realized, and the work only performed by those thoroughly trained for the task, evil results must be expected.

The speaker had described a method of using the finger to loose the tonsil from its bed. This was wrong. Arbuthnot Lane, when in Toronto, had especially cautioned the surgeons against the introduction of the fingers into any wound under any circumstances, and his remarks applied to operations upon the tonsils as well. The procedure was strictly unsurgical.

Dr. Price-Brown: I must thank the chairman and the members of the Section for their patience in listening to a long paper, and for their criticisms, although some of the latter were adverse. It seems strange that Dr. Wishart should admit the validity of the statistics offered, especially those in Logan Turner's department of the Royal Infirmary, Edinburgh, and yet deny their acceptance as a guide for action. It is only by the published report of cases such as these presented in this paper, together with our own individual experience, that we can estimate operative treatment at its true value. The men from whose writings I have quoted had the courage to collect and give to the medical world the evil as well

as the good results. The clinical report of unselected cases from one infirmary, giving eighty cases out of ninety-eight in which tonsillectomy was followed by life-long injury to the pillars of the fauces besides many other evils, certainly does not speak well for this operation—particularly in children—in whom the functions of the tonsil are still in an active stage.

The statement made by one gentleman that it was impossible to tell by looking at a tonsil whether it was diseased or not may have much truth in it; but it is always well to consider a small tonsil healthy and normal until it produces symptoms, and until it does it should be left severely alone.

It is an error to suppose that I advocate the retention of enlarged tonsils which provoke symptoms. I simply advocate their removal on the lines of procedure laid down in my paper, guarding above all things the faucial muscles from injury during the operation. It is much better in every way for a small percentage of patients to return for a second operation at a later date, than in an equal or larger number of cases to do an injury to the muscles of the throat which must last for a life-time.

The objection offered to the insertion of the finger into the throat, when cleansed and sterilized, I do not consider sound. Many leading laryngologists go far beyond myself in its use. Wood-Russ, Richards and Richardson do the complete operation with the finger, eviscerating or enucleating the entire tonsil with it. They claim that by the sense of touch they can, while removing the tonsil entirely, protect the pillars from injury. In my case, however, I only use it when necessary to complete the operation; and I have never witnessed any evil results as a consequence.

One word about the use of cocaine. In certain nasal and throat operations I use a local application of a 20 per cent. solution, and I have sometimes used minute injections of a 10 per cent. solution into the tonsil itself; but never stronger. In the peritonsillar tissues I confine myself to a 4 per cent solution as Ballinger recommends.

References:

1. VON LENART, *Fraenk. Arch.*, xxi, 1909.
2. E. L. SHURLY, *Trans. Amer. Lar. Assoc.*, 1911, 246.
3. WILSON, *Ibid.*, 1911, 246.
4. HUDSON MAKUEN, *Ibid.*, 1911, 231.
5. MOURE, "Pharynx and Larynx," 1909.
6. BALLENGER, Text-book, "Diseases of Nose, Throat and Ear."
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8. RICHARDSON, *Trans. Amer. Lar. Assoc.*, 1912.
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PRIMARY ENDOTHELIOMA OF THE PLEURA

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PRIMARY malignant growths of the pleura are uncommon enough to be worth reporting, and this is my only excuse for presenting this case-history. Moreover, it belongs to a still smaller and rarer class, where the neoplasm is confined strictly to the pleura, and where metastases are absent. Out of 10,829 autopsies in the Pathological Institute in Munich, only two cases of primary endothelioma were found (.02 per cent.). I have been able to obtain in the literature records of only forty-one cases, a summary of which is added below.

A. E., a young Englishman of the better class, twenty-seven years old, applied for insurance in May, 1908, but was declined because the examiner found an area of dulness on the right side of the chest. Rather indignant at this, for he always enjoyed excellent health, and his family history was the very best, he consulted his own physician, who found dulness as high as the sixth rib, with absence of breath sounds in the same region. By the middle of June the dulness had reached the clavicle, and aspiration removed eighty ounces of straw-coloured fluid which contained no cellular elements, and was negative on culture and inoculation. The diagnosis, after this report from the pathologist, was serofibrinous pleurisy. However, five weeks later, the fluid had re-accumulated in sufficient quantity to cause dyspnoea, and a second aspiration drew off another eighty ounces. At the third operation, three weeks later, some blood was noted in the aspirated fluid, which, with the constant refilling of the pleural cavity, warranted the attending physician in making a grave prognosis. Two more aspirations were done before the first of August.

During these two months, the patient complained of no pain—in fact, throughout the whole illness, the absence of pain was a most striking feature. A slight cough gave, after much difficulty, enough sputum for examination, but no tubercle bacilli were found. Calmette's reaction and, later, Morro's were both negative. Up to this point in the disease, there was no fever, the only subjective

symptoms being slight dyspnœa on exertion, and progressive weakness. The patient, too, was losing weight rapidly.

Physical Examination on admission to hospital, August 3rd. Deficient movement over whole right side of thorax. Vocal fremitus and resonance absent. Percussion note dull as high as the second rib, and above this Skodaic resonance. Below the fourth rib, no breath sounds are heard; above, the breathing is distant bronchial, with coarse râles at the end of inspiration. The left chest is hyper-resonant, and the breath sounds are puerile. The apex beat is in the fifth interspace, one-half inch outside the mammillary line. The sounds are normal. Posteriorly, Grocco's triangle can be marked out on the left side. The liver is at the umbilicus. Spleen not palpable. Urine: s. g. 1018, no sugar or albumin. Blood: reds, 3,500,000; whites, 10,000.

Operation. On August 20th portions of the sixth and seventh ribs were resected in the anterior axillary line. At this operation a large quantity of blood-stained fluid found exit, and the pleural cavity was seen to be lined with innumerable nodules, averaging perhaps 15 mm. in diameter, and attached by longer or shorter pedicles to the parietal pleura. One of these was removed for microscopical examination, and was reported to consist entirely of fibrin. A large-sized drainage tube was introduced, from which, during the four months before his death, fluid was constantly discharged, at first sanguinous, but towards the end, greenish. Following the operation there was a slight elevation of temperature which remained to the end. The patient gradually grew weaker, became remarkably emaciated and died on December 22nd, a little more than six months after the first symptoms.

Autopsy, twelve hours after death. The very emaciated body showed on the right side an open wound in the mid-axillary line, in the region of the sixth rib. From this, when the body was turned, about half a pint of greenish fluid, of slight odour, poured out. The right pleura was thickened (5 mm.) and firmly adherent to the ribs and sternum. When this was divided, a large and ragged cavity was disclosed, with many rounded tags attached to the walls (from 1 to 4 cm. in diameter) as well as numerous stringy masses, more or less firmly connected with the pleura. In the dependent portion of the cavity was found about a quart of the same green fluid. The right lung was collapsed and airless, but contained no new growth. The visceral pleura covering it was of the same nature as the parietal—thickened and covered with pedunculated tags. The only portion of the pleura which could

be separated at all easily was that part close to the anterior mediastinum. On dissecting off the pleura, the new growth was found to be of about the same homogeneous colour and consistence as a fresh-cut section of testicle. Very friable, and thicker in some portions than others, the neoplasm seemed to be confined almost entirely to the inner surface of the pleura. Only in one place was there a definite nodule on the outer surface.

The left pleura was also adherent to the chest walls and pericardium by the fibrous bands so commonly seen at autopsy—adhesions entirely different from those found on the right side. The heart was smaller than normal, and displaced one inch to the left. The liver weighed forty-five ounces and was displaced downwards, so that the upper border was half an inch below the ensiform cartilage, and the lower edge half an inch below the umbilicus. No nodules were present; in fact, no metastatic growths were found in the abdomen or thorax, and we were not permitted to examine the head. Besides a dilated stomach and a slightly enlarged spleen, all the other organs were in a normal and healthy condition.

Microscopical examination of sections of the thickened pleura showed the new growth to be an endothelioma. The pedunculated tags were almost entirely fibrin. At no place could there be found evidence of the invasion of the new growth into the surrounding tissue, the line of demarcation between the lung and pleura being always clear and well-defined.

Clinical Considerations

Of the malignant neoplasms to be differentiated we have primary and secondary carcinoma of the lung, primary and secondary sarcoma of the lung, primary sarcoma of the pleura, and the condition under consideration. Both secondary carcinoma and secondary sarcoma can be diagnosed by finding an initial focus—a breast tumour removed perhaps a year or two previous, or a suspicious skin lesion. Primary sarcoma of the pleura is so very rare (only ten cases in the literature) that we need not consider it, and the field narrows down to primary lung carcinoma, and primary pleural endothelioma.

The physical signs of the pleural neoplasm are those of a new growth slowly walling off the lung, from which it is sharply demarcated. The lymph channels of the lung and of the pleura do not, under normal conditions, communicate with each other, those from the lung going direct to the hilus, while the pleural lymphatics lead to glands in the axillary and supraclavicular regions, and along

the internal mammary artery. Hence the diagnostic importance of early developing bronchial stenosis and of compression of the oesophagus from metastases in the hilus.

As tumour of the pleura is always complicated by fluid in the pleural cavity, the study of the exudate becomes of great importance. The large multinucleated cells of cancer with their atypical mitoses, are occasionally found. As Lenhartz says, "It needs only a small flake to make the diagnosis." Bloody, greenish, and especially chocolate-coloured exudate points to pleural carcinoma. The "rasp-jelly" sputum described by Stocks as pathognomonic of lung carcinoma has not been observed by other writers. However, Lenhartz who has made an exhaustive study of sputum considers that he can make a correct diagnosis of malignant pulmonary neoplasm from the presence in the expectoration of certain fatty granular globules. Stubborn intercostal, "month-long" neuralgia, paralysis of the recurrent laryngeal nerve, difference in the size of the pupils, and œdema of the head, neck and arm, are all pressure symptoms more likely to be connected with lung carcinoma.

Endotheliomata of the pleura are at first usually mistaken for serofibrinous pleurisy, as in this case; later the rapid re-accumulation of fluid suggests tuberculosis, and finally, the appearance of a sanguinous exudate, the rapid loss of flesh, and the very chronicity of the disease itself, going on from bad to worse, point only too clearly to its true and malignant character. It must, however, be borne in mind that tuberculosis may accompany and completely mask the neoplasm which is only discovered at autopsy.

To diagnose the condition from primary or secondary carcinoma of the lung itself is a most difficult task, for the endothelioma of the pleura may be a solid tumour weighing 11 lbs., as in Butler's case (No. 18 in summary below). But when the growth is a pellicle of more or less uniform thickness, giving corresponding physical signs, the pleura is more likely to be involved.

SUMMARY OF CASES REPORTED IN THE LITERATURE

1. MADER: Massive endothelioma of the left pleura following trauma. Woman, 57, tumour filled entire lower half of left thorax. Abdominal metastases. Vienna, 1896.

2. SCHULZ: Man, 35. Endothelioma of both pleuræ and lungs with metastases. *Archiv. f. Heilk.*, XVII.

3. NEELSEN: Man, 37. Nodes on right pleura and in both lungs. *Arch. f. klin. Med.*, 1882.

4. EPPINGER: Woman, 16. Tumour filled the right thorax and had extended to diaphragm and vertebral column. *Prager med. Wochen.*, 1876.

5. EPPINGER: Man, 44. Callous thickening of left pleura.

6. WAGNER: Woman, 69. Right pleura irregularly thickened, no metastases. *Archiv. d. Heilk.*, Bd. XI.
7. ROSSIER: Endothelioma of the left pleura, metastases in liver and kidney. "Contributions à l'étude d. cancer prim. diff. d. plèvre."
8. ENGLEBACH: Man, 60. Many nodes on right pleura. Inaug. Diss., Freiburg, 1894.
9. GEBHARDT: Woman, 50. Tumour of left pleura, hilus, lung and diaphragm. Inaug. Diss., Freiburg, 1894.
10. COLLIER: Man, 43. Nodes in the right pleura, with gland metastases. *Lancet*, 1886.
11. HEBB: Woman, 46. Nodes in right pleura, and liver metastases. *Trans. Path. Soc.*, Lond., 1893.
12. TEIXEIRA DE MATTOS: Man, 64. Endothelioma of both pleuræ. Inaug. Diss., 1894.
12. PETERSEN: Man, 67. Left pleura thickened, and secondaries in glands. Inaug. Diss., 1897.
14. PIRKNER: Man, 58. Pericardium and left pleura covered with nodes. Inaug. Diss., Griefswald, 1895.
15. VOLKMANN: Man, 60. Left pleura tumour, with colloid tumour of thigh. *Zeitschr. f. Chir.*, 1895.
16. FLOWER: Female, 57. Left pleura; metastases in heart, lungs, liver and kidneys. *Journ. Am. Med. Assoc.*, LIX., 369.
17. HUISMANS: Female, 59. Right pleura, no metastases. *Deutsch. Med. Woch.*, No. 27, July, 1912.
18. BUTLER: Massive tumour weighing 11 lbs. *N.Y. Med. Jour.*, February, 1908.

The following cases were described by von Glockner, *Zeitschr. f. Heilk.*, Bd. 18, 1897,

19. Man, 44. Left pleura thickened, well marked metastases.
20. Woman, 16. Tumour as large as a man's head on the diaphragmatic pleura, right side. Many metastases.
21. Man, 52. New growth on the right pleura, with numerous metastases.
22. Male, 26. Right side with metastases.
23. Female, 74. Nodes on the right pleura and lung. No metastases.
24. Female, 70. New growth on right pleura as big as the fist, growing into the lung. Secondaries in glands.
25. Man, 42. Left pleura changed into a thickened callosity. Gland secondaries.
26. BENDA: Man, 54. Many small tumours on both pleuræ, lungs and glands free. *Deutsch. Med. Woch.*, 1897, No. 21.
27. Man, 42. Left pleura changed into a swollen mass. Gland secondaries *Jahr. d. Wiener Krankenanstalten*, 1897.
28. RIEDEL: Man, 45. Right pleura and left lung with new growths the size of the fist. Gland secondaries. Inaug. Diss., Greifswald, 1898.
29. HESSEL: Man, 63. Right pleura changed into a thick tumour mass. Gland metastases. Inaug. Diss., Freiburg, 1900.
30. MUNICH PATHOL. INSTITUTE, 1900: Man, 66. Tumours on both pleuræ and on left lung.
31. MUNICH PATHOL. INSTITUTE, 1901: Female, 77. Carcinoma of both pleuræ and right lung. Secondaries in glands.
32. BERNSTEIN: Female, 69. Left pleuræ thickened and nodular. No secondaries. *Albany Med. Annals*, February, 1912.

Besides these tabulated cases, references have been found to the following nine:

FRANKEL, supraclavicular metastases; BONHEIM, 2 cases; PERLS; PODACK; SCAGLIOSI, 2 cases; BOHME; ROGER and LAPAYRE (*Montpel. Méd.*, 1913).

THE TREATMENT OF TABES DORSALIS AND GENERAL PARESIS WITH SALVARSAN

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THE finding by Noguchi and Moore in February, 1913, of the *Treponema pallidum* in the brains of paretics confirmed the growing belief in the identity of cerebrospinal syphilis and parasyphilis. Previous to this the existence of certain border-line cases, the high cell count, and especially the positive Wassermann in both classes of cases, were the basis of such opinion. The introduction of salvarsan in providing a great stimulus to the treatment of ordinary syphilis gave rise to the hope that even parasyphilis might be amenable to treatment. Some early work was done in this direction but usually with little success. This was probably due to the very prevalent idea that one or at most two doses of the new remedy would effect a cure of syphilis.

In some of our own work we came to an early appreciation of these difficulties. Since in several parasyphilitics we obtained encouraging results, we then resolved to continue treatment on somewhat the same basis as the present treatment of ordinary syphilis, *i.e.*, repeated doses of salvarsan controlled constantly by the Wassermann reaction. Up to date, ten cases have been treated. Eight were patients encountered in private practice; two paretics were patients in the Toronto Hospital for the Insane.

Read before the Canadian Medical Association, at the annual meeting in London, June, 1913.

Locomotor Ataxia

Of six tabetics, improvement took place in all. As a rule where lightning pains existed, they were distinctly lessened, and in several cases disappeared altogether. Eye reflexes became normal in several cases. Bladder symptoms disappeared in one case, while in another sexual power returned. Locomotive ability and mentality improved. In practically all, physical well-being, weight and general appearance were better after treatment than before.

CASE 1. Mr. S., aged thirty-five years, gave no history of syphilis, but came under observation complaining of difficulty in walking, lightning pains in the extremities, girdle pains and gastric crises. He found that he could not run or move quickly without being liable to sudden and severe falls without warning, and had great difficulty in walking upstairs. Examination showed an Argyll Robertson pupil in one eye, knee jerk exaggerated on one side and absent on the other. The Wassermann reaction in the blood was negative. In the cerebrospinal fluid, however, it was strongly positive (+ + +) as were the Noguchi and ammonium sulphate tests for globulin. The cell count was one hundred and twenty-six.

This patient was given two full doses of salvarsan. The immediate result was a temporary increase in lightning pains. He was then lost sight of for six months. Returning at the end of this period he reported that practically all of his symptoms had disappeared. He was able to walk or run without fear of falling. He had no lightning pains or stomach trouble. Examination of the blood and spinal fluid showed a negative Wassermann, negative Noguchi and ammonium sulphate tests, and a reduction of the cell count to eight. It is proposed to give this patient a further series of ten doses of salvarsan at weekly intervals.

CASE 2. Mr. S., aged sixty-five years. No history of syphilis. He complained of great difficulty in walking, intense lightning pains, and bladder irritability, which for the past year had made it necessary for him to rise every night from one to twenty times. Sexual power had been absent for six months. He had been unable to open his left eye for several months. Examination showed absence of knee jerks on both sides, Argyll Robertson pupils, some loss of coördination, and moderate Rombergism. The Wassermann in the blood was negative; in the cerebrospinal fluid weakly positive. The Noguchi and ammonium sulphate tests were weakly positive, and the cell count fifty-four.

Treatment with salvarsan once or twice a week was commenced on April 30th, and on June 12th he had had altogether eight doses. Three days after the first treatment his bladder symptoms disappeared, and since that time he has not had to rise from bed at night once. After each treatment, except the last, two weeks ago, lightning pains were markedly increased, while in the intervals between treatment they were absent. During the last two weeks they have disappeared altogether. Walking has improved to such an extent that the patient has discarded his stick. His ptosis has practically disappeared.

Examination of the blood and cerebrospinal fluid shows a negative Wassermann in one, and a doubtful reaction in the other. The Noguchi and ammonium sulphate tests are still weakly positive. The cell count has been reduced to nineteen.

Other cases in the series were of longer standing, and gave only faint laboratory evidence of their existence. While treatment had not such a marked effect upon these, it was invariably followed by distinct changes for the better. This applies again both to the clinical and laboratory aspects.

General Paresis

The series included four paretics. The results in the treatment of these while not final are encouraging.

CASE 1. A demented paretic with marked motor defect, shown by tremors and ataxia. The Wassermann was strongly positive as were the ammonium sulphate and Noguchi reactions. There had been no change in his mental or physical signs after two and one-half month's stay in the hospital. During the next month, seven full doses of neosalvarsan were given intravenously.

He commenced to improve from the first dose, and at the end of the month, his wife and his former employer, who was a physician, asked to have him return home. His ataxia had completely disappeared. His tremors were confined to the facial muscles. His memory returned. He became interested in his surroundings, and, according to his employer's report, is as well as he was three years ago. He returned voluntarily for treatment. So far there is no appreciable change in the cell content of the cerebrospinal fluid, in the degree of globulin present, or in the intensity of the Wassermann reaction. All are still positive.

CASE 2. And end-stage paretic in a state of constant unrest with emaciation and advanced dementia. All laboratory findings strongly positive.

To all intents and purposes, this patient's doom was sealed, but it was decided to give him intensive treatment in order to find whether any effect could be demonstrated. Seven intravenous injections of full doses of neosalvarsan were given in three weeks. At the end of that time an unintentional break occurred in the treatment, and he received no arsenic for seven days, when he developed pneumonia and died. He had showed a marked improvement in both his mental and physical condition under treatment, and the medical staff were becoming enthusiastic over it.

Post-mortem findings were of a not unusual kind, except that microscopic examination of the cerebral tissue revealed a marked diminution in the amount of perivascular round-celled infiltration. Laboratory findings in this case were unchanged.

Conclusions. It is rather difficult, at the present stage, to offer a definite opinion as to the outcome of the treatment of paresis based on present statistics. In the natural course of events, these cases show remarkable remissions. It is difficult to select cases, too, and the extensive cerebral changes found *post mortem* in most cases render the prospect of inducing reparative changes by any mode of treatment discouraging. One can say, it seems, that if any success is to be attained, it must be by means of the method used in treating other forms of syphilis, *i.e.*, intensive treatment controlled by the Wassermann reaction.

Deductions we have drawn from the results in the present series are as follows:—

1. So called parasyphilis is syphilis. Classification of the two as separate diseases is artificial and unnecessary.

2. The symptoms of tabes dorsalis can be greatly improved by treatment with salvarsan. Some cases can apparently be absolutely cured.

3. Results in the treatment of general paresis warrant active treatment of all early cases. A cure may be possible.

4. Best results are obtained in both tabes and paresis from intensive treatment, *i.e.*, one or two full doses per week.

SEPTIC PUERPERAL INFECTION, DIAGNOSIS AND TREATMENT

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THE diagnosis of puerperal infection, as a rule, is not difficult, but the determination of the variety of the infection, and the course it will pursue is frequently attended with insurmountable difficulties. Bacteriological examinations of the lochia and of the blood do not afford us the aid in diagnosis which many claim for them. Bacteriologists surround themselves with too many casuistic refinements to be of much help to the clinician at the bedside. They lay so much stress upon the hæmolytic and non-hæmolytic properties of the streptococci, and in the same breath they tell us the non-hæmolytic variety may become hæmolytic, and *vice versa*. Further, they tell us, and we know it to be so, streptococci are found in the gravid and puerperal woman, without any pathological significance. Hence, a woman in childbirth with fever due to other causes, might have her condition erroneously diagnosed as puerperal infection, because streptococci were found in the lochia. Still we would not wish to be understood as totally disregarding the value of bacteriology in the diagnosis and prognosis of puerperal septic infection. A given case must be subjected to the most careful clinical scrutiny and then, in cases of doubt, bacteriological examination of the discharges and of the blood may be of some value in diagnosis and prognosis. He who would detect an infection at the onset, would see to it that every puerperal woman had the temperature taken per rectum, at least twice daily. In the presence of a temperature above the normal, he should not throw dust into his own eyes no matter what he would do to the eyes of others by attributing it to nervousness, indigestion, malaria, and milk fever. Before an audience like the present, it is superfluous to state that the flow of milk into the breasts is not attended with fever. Malaria at the present day, need not be guessed at. It can be excluded or established by the absence or presence of the plasmodia. Fever, therefore, in the puerperal woman is *prima facie* evidence of puerperal infection. But the

evidence requires to be thoroughly sifted; many cases will show a temperature of two or more degrees above the normal, for one or two days, during the first week constituting the group the Germans have termed "one-day fever cases." Zweifel, we think, has detected the etiological factor in these cases, in the presence of the blood clots that accumulate in the cervix at the termination of the third stage of labour. Be this as it may, ever since we have adopted his suggestion of manually removing all the blood from the cervix at the end of labour, we have seen fewer of the so-called cases of one-day fever. Constipation is frequently held as a cause of fever in the puerperium, and every one of us has seen the temperature suddenly shoot up to 105° or 106° , and as suddenly drop to the normal after a thorough emptying of the bowels. To our mind, the constipation acts only in an indirect way, by the fæcal mass accumulated in the rectum forming a direct barrier to the escape of the lochia, either from the cervix, or from the upper part of the vaginal canal. In what other way could an overloaded bowel give rise suddenly to such a high temperature which would disappear as suddenly with the removal of the fæcal mass? Here, also, we need not grope in the dark. The insertion of the finger into the vagina will detect the hard bulging posterior wall and the obstruction to the outflow of the normal discharges.

Having disposed of the milder forms of infection we are prepared to take up the more serious cases. You will have observed that we have studiously avoided using the term "sapræmia." We have always deemed it a misleading designation and are gratified to find that this is the stand taken, at the present day, by most authorities. The bacteriologists have taken away, recently, the last prop, which so long held up the structure of sapræmia. They have shown that in these cases of so-called sapræmia streptococci are found of the anærobic variety possessing the same pathogenic features as the ærobic. They have found them in the blood and in some fatal cases they were the only variety present. When we, therefore, are face to face with an infection, we can no longer lull ourselves into a false security by assuming that we are confronted only with the sapræmic variety of infection. The question is only whether we are dealing with a mild, severe, or rapidly fatal infection, bearing in mind all the time that the apparently mild may at any time develop into a severe or even fatal form.

Having concluded from our bedside observation that we are dealing with a puerperal infection, our next step should be directed to endeavour to ascertain the form and the course it is likely to

follow. To do this, a careful local inspection should be made, followed by a bimanual examination of the pelvic contents and, if possible, by a digital exploration of the uterine cavity. The perineum and vaginal canal should be thoroughly inspected for any tear or abrasion, and if such is found, a note should be made of the appearance of its surface, whether it be clean-looking or covered with a grayish membrane. If the perineum had been sutured, the sutures should be removed, so that the wound may be thoroughly inspected, remembering, however, that the infectious organisms may enter through such a wound and yet cause little or no local reaction. In such a contingency, the infection rapidly becomes general and leaves us in no doubt as to the nature of the case. In the majority of instances, however, the organisms are not so virulent, they cause a local reaction and travel upwards along the blood or lymph vessels, more frequently along the latter. In that instance, an exudate or peritonitis develops with the signs and symptoms that accompany them. The treatment of these will be taken up later. At the present time, it will suffice to state that the treatment of infected areas in the perineum or vaginal canal should be based on general surgical principles of cleaning the wound and providing for free drainage. Next, the cervix should be exposed with a suitable speculum and note taken of its tears or wounds. Having failed to find any probable site of the infection in the perineum, vaginal canal, or cervix, our further step should consist in making thorough exploration of the uterine cavity with the finger or fingers. We are safe in asserting that fully 90 per cent. to 95 per cent. of the cases of puerperal infection originate in the interior of the uterus. A very large percentage of these are due to placental remains. A digital exploration of the uterine cavity is not always easy of execution, and may call for general anæsthesia. Here it may be well to draw attention to the fact that placental residues, even of good size, do not always manifest themselves by hæmorrhage or fetid lochia, as is generally stated. We have frequently observed them in cases in which neither of these symptoms was present. Having found placental remains, what is the treatment to be instituted? Here we encounter a great diversity of opinion. At the present time, the trend is toward a "let alone" policy, unless there be hæmorrhage. We must confess we are not in sympathy with such an attitude, we are of the opinion that the careful removal of such infected products of gestation will frequently arrest the process or aid very materially the economy to overcome the infection. How is the removal to be accomplished,

with the finger or with a sharp or dull curette? Many a lance has been broken on this point. To us it seems a matter of less importance, with what it is done and as to how it is done. One man may accomplish the object in view better with his fingers than he could with an instrument. Another feels safer with the use of the sharp or dull curette. We confess to belong to the latter class. A great deal has been said and written upon the dangers of breaking down the protection wall, which nature forms underneath these infected tissues in the uterus. Based upon this fear, an author (T. J. Watkins, of Chicago) recently has advocated the packing of the uterus with gauze, in order to effect a separation and expulsion of the placental remains. To our minds it would be difficult to conceive of a more dangerous procedure. If we have learned anything in the past years in the matter of infection, it is that there is no better way of making a local a general infection than by employing means to prevent drainage, and to place the infected area under high pressure. Every one to-day recognizes that a strip of gauze in the uterus, even as a drain, interferes with rather than facilitates drainage, leaving aside the fact that it always increases decomposition. If gauze used loosely as a drain acts just in the opposite manner, what will it do when it is packed tightly and kept in position for twenty-four hours?

After removing the placental remains, it is our custom to irrigate the uterus, either with 50 per cent. alcohol, or a weak solution of iodine. Thereafter, the uterus is religiously left alone. Ergot, strychnine and quinine are given in suitable doses, to aid uterine contractions and involution.

The indiscriminate use of the curette cannot be too strongly condemned, and one cannot emphasize too forcibly the great harm that may be done when it is employed in a haphazard manner, as frequently is the case. Our advice would be, when in doubt do not use the curette; usually the opposite course obtains, because the patient has fever she is subjected to a curettage. It is scarcely necessary to add, the curette should not be used for septic and gangrenous endometritis. Here there is great danger of breaking through the protective zone which nature forms, leaving aside the impossibility of removing all of the diseased endometrium. It is doubtful, even, whether intrauterine irrigations in these cases do not do more harm than good. If the discharge be very profuse, an occasional irrigation with some bland fluid to wash away the excess of discharge may be beneficial.

The formation of an exudate is, as a rule, a favourable omen and is nature's method of limiting the infective process.

Post-partum exudates may be divided into three groups. One group will undergo complete absorption, in a period varying from a couple to several weeks, under any form of palliative treatment, if the patient be only kept at rest. We have thought the absorption was hastened in many of these cases by the employment of dry heat over the lower part of the abdomen. Into this group falls by far the largest proportion of cases.

A second group forming a fairly large percentage of cases, will apparently remain stationary for a variable period, and then show signs of softening or suppurating. We always suspect suppuration when recrudescence of the fever occurs after an afebrile period, even though fluctuation may not be obtainable. When suppuration has once occurred, the obvious course is to make a good sized incision, and provide for free drainage. We deem it more prudent to abstain from irrigating the abscess cavity, at the beginning.

The exudates of the third group, fortunately forming only a very small percentage of the cases, consist of strong, hard formations, filling sometimes the entire pelvis, and even extending up to the umbilicus. There is no form of treatment, that we know of, that has any influence upon these cases.

The next variety of infection we desire to discuss is that formerly known as pyemia, but which in recent years has been described as septic thrombophlebitis. This form of infection has acquired particular interest ever since Trendelenburg, in 1902, cured a case by ligating the affected pelvic veins. You all know that it was the brilliant results obtained by the aural surgeons with ligation of the internal jugular vein in septic sinus thrombosis that led Trendelenburg to the procedure. The same line of reasoning had induced Freund already in 1898 to a similar surgical intervention. But his case and Bumm's subsequent two cases ended fatally. No further attempts were then made until that by Trendelenburg, already referred to. Since then, as you are aware, quite a considerable literature upon the subject has sprung up. To us the operation appealed very strongly, and we were among the first, if not the first, to perform the operation on this continent.

In reference to diagnosis, further experience has only confirmed what we have stated on a former occasion. We said, "Some authors, notably Trendelenburg among others, have laid stress upon the occurrence of repeated chills and would feel warranted in operating on the occurrence of the second chill. Such an inference, we all know, would frequently lead to error. First, we have seen cases with more than two chills that afterwards pursued

a mild course until complete convalescence. Secondly, cases of genuine thrombophlebitis will be met with in which a chill may not occur during the entire course of the disease. In one of our cases, the first chill occurred on the twenty-third day, and the second chill on the twenty-sixth day of the infection. The third and last chill in the entire course of the protracted illness, covering fifty-two days, followed an intravenous infusion, which no doubt caused it." What we have found of great diagnostic value is a great elevation and depression of the temperature curve within the twenty-four hours, a difference often of 5° to 6° or more between the extremes. This is usually associated with a pulse varying from 80 in the afebrile stage to 110 or 120 at the height of the fever. Characteristic of the pulse is its good quality, which is usually maintained until nearly the end. The patient usually has very few subjective symptoms and the appearance, as a general rule, is good. These features, together with practically a negative result of a pelvic and abdominal examination, will in most instances warrant a diagnosis of septic thrombophlebitis. Some excellent observers (Bumm and Veit) lay stress on being able to palpate—through the abdominal wall or on pelvic examination—the thickened and thrombosed veins as tortuous worm-like structures. We frankly confess we were able to elicit this objective sign in but a few of the acute and subacute cases coming under our observation. We reached a diagnosis, in most instances, rather by the negative result of our local examination, and by a process of exclusion, than by any positive findings objectively.

Thus far, our experience with ligation of the affected veins alone has not been encouraging. The operation was attended with, seemingly, only a temporary benefit. The temperature fell for a couple of days and then the disease ran the same course as prior to the operation. However, it seemed to us, judging from the condition found, that had intervention been resorted to earlier, recoveries might have ensued. This much we feel safe in asserting if the operation did no good, it did not do any harm. The patients withstood it remarkably well, there was no apparent shock, and if anything there was an improvement for a few days.

While our results thus far with ligation of the veins alone have been negative, on the other hand they have been very gratifying when with the ligation of the thrombosed veins, we removed the uterus also. We have up to the present time operated upon nine cases with six recoveries. One of the fatal cases developed severe pharyngeal diphtheria after operation, and death may have resulted

from that complication. A second case was that of a very stout woman with involvement of the right internal iliac vein with considerable exudate. The operation was very difficult and attended with profuse hæmorrhage from the venous plexus at the base of the right broad ligament. The great loss of blood at the operation no doubt contributed to the fatal result, which occurred forty-eight hours after operation. The third death was due to the narcosis, twenty minutes after the operation was begun and just as we had succeeded in excising the right suppurative, thrombotic ovarian vein. The patient had been taking the anæsthetic poorly, and the inexperienced interne crowded the ether until he literally drowned her with it. An autopsy confirmed this conclusion.

In all of these cases in which we removed the uterus, the organ showed marked pathological lesions, justifying the course pursued. These uteri were either studded with miliary abscesses containing streptococci in abundance, or the endometrium was in a condition of gangrene swarming with the same microorganism.

The technique of ligating the pelvic veins, we cannot enter into at the present time. Anyone interested in the subject will find a full description of it with drawings, in an article read by us before the American Gynecological Society in May, 1910, and published in *Surgery, Gynecology, and Obstetrics*, July, 1910.

Before dismissing this topic, let us emphasize that not all cases of septic thrombophlebitis call for surgical intervention. A large percentage of the cases run a fairly mild course and will get well of themselves, and without the development of metastatic abscesses in distant parts, in other words, without developing into a true pyemia.

In what other conditions is hysterectomy indicated? First, all will agree that when a submucous fibroid becomes infected *post partum*, the uterus should be removed. Here the results should be almost as good, if one does not wait until the patient be moribund, as in the operation for ordinary fibroid tumours. We have operated upon four such cases within the past few years, with recovery in all. Secondly, in cases of purulent metritis, that is, when the uterine musculature is studded with abscesses varying in size from that of a millet seed to that of an English walnut. In this group are not included the cases in which a solitary abscess exists in the uterine wall, and when all that is necessary is incising and draining the abscess, or excising it, as we were able to do in two instances.

The diagnosis of purulent metritis has to be made chiefly by

exclusion. There is high fever with up and down excursions which, however, are not as marked as in septic thrombophlebitis. The uterus is much larger than it should be at that period of the puerperium, and is soft and flabby and shows no tendency to contract under stimulation, such as kneading and compression. In addition, there is an absence of physical signs elsewhere; there is no exudate, no enlargement of the adnexa, and no sign of peritonitis.

The general treatment in all forms of puerperal infection is very important, and in very many cases is the only treatment called for. It should consist of providing the patient with physical and mental rest, by drugs, if necessary. An abundance of fresh air, nutritious food in sufficient quantities, and moderate free action of the bowels and other emunctories. Where it is feasible, as in hospitals, the patient should be kept on the roof under suitable arrangements, and given a sun bath for several hours a day. Where a roof is not available, a sun bath can be provided for through the employment of open windows. In cold weather the patient should be protected in the proper manner while exposed to the open air.

Before concluding, we wish to emphasize again that the vast majority of cases will get well, treated on general and conservative principles; that it is only in about, roughly speaking, 10 per cent. of all cases that any surgical intervention comes into consideration; and that in considering surgical measures, no hard and fast lines can be laid down as to indications. Each case must be studied carefully at the bedside and closely watched as to its progress. When feasible, whatever aid is to be obtained from a bacteriological examination of the lochia and of the blood, should be sought and the result duly weighed. Then when all these conditions have been fulfilled and one feels he has the necessary skill and experience, he may be able to save a life here and there, by timely surgical intervention, otherwise it will be safer to rely upon nature's effort with the aid of palliative and supportive treatment.

The subject of puerperal sepsis is so extensive that you will, I am sure, make allowances for our having treated it in a fragmentary fashion. Our aim has been merely to present for discussion a few practical points in diagnosis and treatment.

LOOSE BODIES IN THE KNEE-JOINT

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THE condition of loose bodies in the knee-joint has been recognized, and has been the subject of much interest to surgeons for many years. In pre-Listerian days the position assumed by the profession regarding the subject was one of masterly inactivity in many cases, yet not a few records of operative interference and their disastrous results have been handed down to us. Larrey, in 1861, collected the reported cases operated on from the time of Ambroise Paré; in all they numbered 169, and of these thirty-five died. History does not relate how many ankylosed knees in suitable or unsuitable positions remained to the fortunate ones as a lasting memento of surgical skill. In 1803, however, William Haey reported a successful case. As with joint surgery in general, the past fifteen years have seen great strides in diagnosis on account of our improved operative technique, the interior of so many more joints being opened to the surgeon's view.

Loose bodies arise from several causes and the classification given by Whitelock in his book, "Sprains and Allied Injuries," appears to be a satisfactory one. He divides them into those bodies introduced from without, those derived from separation of one of the component parts of the joint, and those derived from growth or formation of structures not normally forming part of the joint. Of cases where the body has been introduced from without, the common intruder is a needle which is accidentally or wilfully introduced. Of this type of case, one has seen three instances, one where the joint was filled with sewing needles by the patient herself, a neurotic of the worst type, illustrated in Young's "Orthopædic Surgery," page 915. In another case, a child of six years old had the misfortune to run a needle accidentally into the joint while playing on the floor, a needle previously dropped on to the carpet being the determining factor. The third case is of a young lady

who struck one as being the reverse of neurotic, who came for examination for vague symptoms of knee-joint derangement. A radiograph cleared up the mystery, for a fair-sized needle was found lying in or around the tendon of the semimembranosus. No reason for the presence of the intruder could be discovered. These instances are of interest on account of their rarity, but it is of the more important group of cases, where the body is due to some detachment of a portion of articular cartilage, with which we next have to deal. Small chips of articular cartilage are sometimes detached from the femoral condyles by an injury, generally a fall or blow. In one instance, a kick sustained on the football field wrought the injury. The following case is typical of the condition: A youth of nineteen, an engineer by trade, fell from a platform, a height of four feet, on to a tiled floor, striking the right knee, which was forcibly bent. The knee was painful, though he found he was able to fully extend the limb immediately after the injury, but it was noticed that the joint quickly filled up with fluid. When the effusion had subsided, a matter of ten days after the injury, the practitioner discovered some hard body lying behind the patella, so the patient was sent to Liverpool for advice. The *x*-ray showed a crescentic-shaped piece of cartilage lying in the joint behind the upper portion of the patella, the body evidently having been detached from the external condyle. The loose piece was removed by open operation and full function resulted. A few cases have been seen where a portion of the articular surface of the tibia has been chipped off, giving rise to the same symptoms as described in the above case.

The semilunar cartilages are often the injured part from which a loose body is derived but the body is in this case, as a general rule, attached to its host by a fibrous pedicle. One has seen the anterior portion of the cartilage frayed in part, owing to fracture or rupture of its anterior horn, but in addition bearing a cartilaginous body as large as a lentil. This is attached to the torn cartilage by a fine fibrous stalk.

A young colliery sub-manager was seen recently complaining of constant locking of the left knee-joint, due to a loose body which could be plainly felt extruding between the bones on the antero-internal aspect of the joint. This mass, which felt like a pea, could be readily replaced by the patient, who by constant practice had learned the manœuvres of alternate flexion, extension and tibial rotation necessary to overcome the disability. He stated that about three years ago, while dropping to earth from a scaffold-

ing, he alighted with the left foot on an inequality of ground. There was a sickening pain in the left knee, and he collapsed in a heap. He rose and found that he could not fully straighten the knee, but in spite of pain, he continued work. Effusion followed, but in the course of a few days the leg gradually became straight. In a week's time, a twist of the leg occurred while straining at a heavy weight, and a repetition of pain and disability took place. The leg was firmly locked, but on placing his hands on the knee, and gently kicking out with his foot, something went into place with a click. After this occurred, effusion lasted for another fortnight. Six months went by without further trouble, and then a similar accident to the previous one resulted in like disability, but still no medical advice was requisitioned. In a year's time a sudden twist while turning in bed resulted in locking of the knee, and as the patient was manœuvring the limb, with his hands holding the knee, he felt some lump on its inner side, suddenly slip back into the joint, and this caused instant cessation of the derangement. From this time on the locking has become more frequent, and for the last month or two it has been of almost daily occurrence. Effusion nowadays never follows the derangement, and the body when out of place can be plainly felt, and its position never varies. The disability occurs at any time, and is not referable to the specific strains involving external rotation of the tibia or abduction of the knee, as was the case in the early days of the trouble. An x-ray photograph revealed nothing abnormal. The knee-joint was opened by the usual internal incision, and at once the body presented into the wound. It was a sausage-shaped body an inch long, attached by a thin pedicle to the tibia in front of the spine. It was found to be the anterior half of the internal semilunar cartilage, but so changed by an oedematous infiltration as to be quite smooth and cylindrical in shape. The anterior horn formed the pedicle, which was thin and cord-like; this was divided and the body removed. The cartilage was fractured transversely and the posterior half was quite firmly attached, and so was left *in situ*. The case is of interest in that we can trace the change of symptoms from those of injured cartilage to those of loose body. The differential diagnosis between a pedunculated body that cannot be palpated from without the joint and a loose cartilage is practically impossible, as the symptoms are identical. A radiograph as often as not fails to throw any light on the subject unless, as occasionally happens, the loose body has a bony basis. One calls to mind at least two cases where the body was plainly felt, the patient in each instance being

able to manœuvre it into the space between the patella and the internal condyle. In each of these cases, despite the fact that the bodies were bigger than a pea, no sign was manifested by *x*-rays, but on opening the joint a pedunculated cartilaginous node was removed. Where a body lies loose in the joint differential diagnosis is not so difficult. Locking of the joint is a frequent occurrence without reference to twist or strain, in fact it often occurs while in bed. The blocking is of an evanescent nature, like that due to a synovial fringe, but is more acute and painful than the latter. Another similarity between the two conditions is noted in that effusions are very prone to occur in either case. Almost invariably the patient can locate the body, and before he appears for advice is generally quite adept in dislodging the offender from one of the inaccessible corners of the joint.

The following case is of interest, as a loose body was present with a displaced internal semilunar cartilage:—A young lady, some weeks previous to being seen, slipped and fell heavily while leading her horse down a steep, rocky hill. The left internal semilunar cartilage was found to be still displaced, there being inability to fully extend the limb, although the blocking appeared to be of a fibrous and not of a bony nature. An *x*-ray showed a very small body lying near the outer side of the joint, probably a sesamoid bone in the tendon of the biceps, and also a minute chip in the region of the internal semi-lunar cartilage. The cartilage was reduced by manipulation, and it was thought that the small body was fixed, and as its precise position was a matter of doubt, and it was not giving rise to symptoms, operation was deferred. After the usual period of rest to the joint, followed by massage, the wisdom of this step was proved, as there has been no return of the symptoms. The next case is of the same nature as the two preceding ones, but exhibits some unique symptoms: A youth of eighteen was kicked some fifteen months ago on the knee by a horse. Synovitis followed, which was treated by rest and massage. In three week's time a radiograph was taken, showing a piece of bone chipped from the region of the external condyle of the femur and lying in close proximity to its articular surface. Operation was advised, but was refused. The boy went about, but as soon as full function was obtained sharp pains began to occur, with slight "giving" of the joint when weight was borne on the flexed knee, as in walking upstairs. Consent was obtained for operation, and on opening the joint a chip of bone was found fixed to the external condyle by a fibrous union. This was cut away and a perfect cure resulted.

The occurrence of sesamoid bones seen in lateral view radiographs of the knee often has a bearing on the diagnosis of foreign bodies. These sesamoid bones vary greatly in size and occur approximately in 10 per cent. of all radiographs of this joint. They vary in size from very small flakes of undifferentiated structure to a definitely trabeculated bone the size and shape of a peanut. They have no bearing, except in a few cases where I have seen them apparently lying on the ligament of Winslow; as a rule they lie behind a line drawn between the most posterior part of the condyles of the femur and the tuberosity of the tibia. However, a small percentage seem to lie within the joint, judging from the appearance of the radiogram, and on one occasion where a patient came with definite symptoms of foreign body, such as locking with the joint in full flexion, I had a wild-goose chase in the popliteal space!

In referring to the type of loose body produced by organic change, one does not propose to deal with the so-called corpora oryzoidea which are of a fibrinous nature. These are due to degenerative changes of the synovial membrane, and occur in tubercular hydrops and in Charcot's disease. They do not produce the classical symptoms referable to bodies composed of organized tissues, and so do not come within the scope of this paper.

Loose bodies of a type due to organic change in joints, with no history of trauma have been the cause of much controversy. As an accompaniment of arthritis deformans, it has been long known. However, in 1887, Koenig described the formation of these bodies by a process which he considered *sui generis* and which he named osteochondritis dessicans, a condition which he held was not due to rheumatoid arthritis, and was not the result of trauma, but was the effect of blocking of the nutrient end-artery supplying the part. Koenig described the detachment from the underlying joint ends, of pieces of cartilage of varying size. These fragments acquire a covering of connective tissue containing some cartilage cells. It is usual to find a defect in the joint segment from which the fragment originated, although this rapidly fills in with cartilage. Apart from this separation, the joints are otherwise normal, except for some effusion and villous hypertrophy, and after removal of the foreign bodies they remain well. Koenig admits that in certain cases chondrification or ossification of hypertrophied villi does occur. Koenig's work was disputed in 1896 by Barth, who held that arthritis deformans and trauma were the only two modes of formation of loose bodies of chondral and osteochondral nature. Other

cases of this condition have been reported by Ludloff in 1908 and Freiberg in 1911, but the presence of the condition as a separate entity still appears to be *sub judice*, although a radiograph answering to the condition was sent to the writer by Mr. Fairbank of a case seen by him at the Great Ormond Street Hospital for Children, in London. Apart from this one case, although many radiograms of foreign bodies have been examined, I have not been able to find any definite cases where there has been no history of trauma or of hypertrophic rheumatoid arthritis present. A body due to organic change in the joint usually proves on section to be composed of fibrous tissue, but there is sometimes found to be a central area of a different nature. Lime salts in small quantities may be present with some yellowish material, evidently derived from blood pigment, the tissue round this containing groups of cartilage cells. Freiberg assumes that the production of such a pedunculated body was the result of changes in the synovial membrane, which were the results of blood vessels proliferating and becoming obliterated afterwards. This corresponds with the process suggested by Wollenberg as the foundation for the production of hypertrophic rheumatoid arthritis. Wollenberg's paper is very interesting in that he strives to prove that the changes in cartilage and synovial membrane seen in arthritis deformans and traumatic arthritis are all due to chronic vascular changes. Whether the determining factor is a chronic irritation of toxic or traumatic origin, the result is a congestion and proliferation of blood vessels which cause changes in both cartilage and synovial membrane. As the determining factor increases, obliterative vascular changes gradually occur and reduce the blood supply. The result on cartilage is that pieces become detached owing to rarifying osteitis occurring at the chondro-osteal junction, whereas the connective tissue of the synovial membrane becomes hyaline, then chondrified and finally perhaps calcified.

The diagnosis of bodies of this nature is simplified by means of the *x*-rays. A lady of middle age fell and injured her left knee three months before being seen. A radiogram showed that there had been a detachment of a small rheumatoid excrescence from the superior surface of the tibia anterior to the spine—one of the commonest locations. This prevented full extension by 25°. Operation was not permissible, so the knee was forcibly extended and kept at rest for two weeks, and afterwards a cage-splint, limiting movement, was applied with marked alleviation of symptoms.

A radiogram shows most beautifully a suprapatellar pouch containing a string of foreign bodies due to hypertrophic rheumatoid arthritis. These have the appearance of an irregular rosary, and are obviously of the degenerative variety. There was no history of injury in this instance, but the patient, a man of forty-nine, complained of recurrent effusions. The bodies were removed by open operation and marked improvement followed, although obviously a cheerful prognosis could not be given owing to the bony changes which had occurred.

My best thanks are due to Mr. Robert Jones for the use of his cases, and for much kindly advice.

Cases of smallpox have been reported recently from many places throughout Ontario. At the beginning of February there were in Fort Frances 11 cases, in Ottawa 8 cases, in Toronto 2 cases, in Hamilton 4 cases, in Yarmouth 9 cases, in St. Vincent 4 cases, in Rothwell 4 cases, at Walpole Island 3 cases, in Lyn 1 case, in Frederickburg 1 case, in London 7 cases, in Brighton 1 case, in Rockland 3 cases, in Alfred 3 cases, in Hawkesbury 2 cases, in Hallowell 1 case, in Innisville 3 cases, in Charlottenburg 4 cases, in East Flamboro' 1 case, and in Mount Forest 2 cases. Thus it is seen that cases of the disease are distributed over a large area, and the prevalence of smallpox in the United States makes the situation more serious. At Niagara Falls, on the New York side, on January 22nd, 108 cases were reported under quarantine. A strict inspection of all persons entering Canada from the United States is now made, particularly at the Sault, Rainy River, Fort Frances, and Niagara.

Editorial

A VICIOUS SYSTEM

AS we have previously pointed out in these columns, the Montreal General Hospital has been for years a victim of an antiquated system of election to its staff. A vacancy recently occurred on the surgical side, through the retirement of Dr. F. J. Shepherd, who has served the hospital with all his talent for thirty years. There were four candidates for his place, all of them well qualified. Under the circumstances, it was necessary for each of these candidates, either in person or through friends, to canvass the governors of the hospital, numbering in all more than a thousand. It goes without saying that such a campaign is scarcely compatible with professional dignity. It is distasteful to the lay governors, presumably so to the friends who canvass, and to the medical staff, but the persons to be commiserated most are the candidates who themselves are victims of this vicious system. Bitterness is apt to be awakened, and it may well be imagined that defeated candidates and their friends might harbour a temporary enmity to, or experience a temporary alienation from the support of, the institution.

Here is a hospital of the first class in which no physician or surgeon can obtain a permanent post without possessing himself of the suffrage of the necessary majority of a thousand or more citizens who by kindness, chance, generosity or wealth, have become governors of the institution. The method of making professional appointments by public vote is wholly bad. No one will deny the entire unfitness of the thousand citizens to choose men for positions which are in the highest degree technical; if they had opportunity of observing

the work or examining carefully into the records of candidates, they might become entirely fit for the purpose of making a choice. Most of the governors dislike the situation which has been forced upon them. There seems every reason for allowing them to pass the responsibility to shoulders on which it more fittingly falls; and it seems properly to fall, to a large extent, upon the already appointed medical staff of the hospital. The governors, like most other people, realize the drawbacks involved in such a change; nowhere, alas! are medical men exempt from professional and even personal prejudice; the world over efficiency is promoted by harmony, if at times sacrificed to it. It is better, therefore, in the case of a public institution that the impartiality of the lay overseers should be combined with the professional knowledge of the staff. All appointments should be made jointly by the committee of management and the medical board, and a potential or prospective candidate should be singled out far in advance for observation, encouragement, and training, so that when the occasion arose, his final selection and appointment would come about as if it were automatic and inevitable.

If a medical board fail to rise to the dignity of its duty, if personal prejudice or professional jealousy be allowed to enter its electoral deliberations, then let the shame fall to it, in proportion as the loss falls to the institution it serves. We believe that the medical board of a hospital may be trusted to have a keener sense of respect and affection for its institution than any other group of individuals connected with it. In spite of sentiment to the contrary, we are fully in favour of allowing the members of the medical staff of a hospital the actual ultimate choice of who shall be their colleagues.

The present election has aroused unusual public interest, and all concerned have felt that the climax has been reached. The governors, therefore, have authorized the board of management to take the necessary steps to have the hospital's charter amended, so as to permit the adoption of a rational method of appointment. The Montreal General is one of

the premier hospitals of Canada, and those who wish it well will be gratified to see this necessary reform accomplished.

DR. SHEPHERD'S RETIREMENT

ON February 17th, Dr. F. J. Shepherd retired to the consulting staff of the Montreal General Hospital, after serving that charity as senior surgeon for thirty-one years. Dr. Shepherd graduated from McGill University in 1873, and joined the staff two years later as demonstrator of anatomy. In 1883 he was appointed professor, and in 1908 he became dean. He resigned his professorship last year, so that now he is fairly free from professional appointments. All the honours which could come to a surgeon have come to Dr. Shepherd, and they would be long to enumerate. Honorary degrees from various universities, the presidency of innumerable medical societies, congresses, and associations, amongst them the Canadian Medical, all fell to his lot; and he has been a continual contributor to periodical literature and to text-books. He achieved a place of the highest distinction in the medical profession of the world, without sacrificing his interest in the wider life. He developed a large curiosity in art, travel, sport and literature; and he has yet many years before him for the indulgence of those tastes. But above all this, Dr. Shepherd did a greater work. He exercises a steady influence upon the profession in Canada. He has been a stout upholder of the noble etiquette of the healer's calling, and a protagonist of scientific honesty, just because he is himself kind and honest. He was never carried away by mere cleverness. He was always more concerned about what a man could prove than in what he said. He formed his own opinions of men and events, and distributed a kind of rough justice to students and colleagues alike. In medicine he has had a profound distrust of brilliancy, and if he was wrong at times, he was very often right, not unlike the faithful watch-dog who barks so successfully at thieves that occasionally he bites a

harmless intruder. The profession may be assured that it will not be deprived of the benefits of Dr. Shepherd's larger criticism; one is bound to confess that in later years, this criticism seems at times well and duly tempered with a kind humour; indeed, there is a growing suspicion amongst the younger men that Dr. Shepherd is not as serious as he used to be. The truth is: he never was.

THE ANNUAL MEETING

THE local committee in charge of the arrangements for the annual meeting, which will take place in St. John, N.B., July 7th to 10th, has made good progress. We have received from the programme committee a preliminary list of papers and of prospective contributors. The address in medicine will be given by Dr. Thomas McCrae, professor of medicine in the Jefferson Medical College, Philadelphia; that in surgery by Mr. J. Rutherford Morison, professor of surgery, University of Durham, Newcastle-on-Tyne; and that in obstetrics by Dr. Robert Jardine, professor of midwifery in St. Mungo's College, Glasgow. A public lecture on "Health Problems in Canada" will be delivered by Dr. C. A. Hodgetts, of Ottawa. The last day of the meeting will be occupied by clinics at the General Public Hospital, that in surgery being given by Professor Armstrong, of McGill. The preliminary programme, as so far arranged, will be found printed on page 248 of this issue. Reduced rates will be available on all railways to St. John for the meeting; details of these arrangements will be announced later. Members who expect to attend the meeting, and who desire hotel accommodation, are requested to apply to the secretary of the reception committee, Dr. F. T. Dunlop, 142 Waterloo Street, St. John.

The Canadian Association for the Prevention of Tuberculosis will meet in Halifax on July 13th and 14th, the Monday and Tuesday following the St. John meeting. In this way those interested in the two associations can conveniently attend both meetings.

MONTREAL'S PERIL

MONTREAL is laying up judgement against itself. The water supply of the city is in danger; it failed entirely on December 25th, and was not restored for ten days. During that period there was great inconvenience and much misery. Fires broke out, and in the entire absence of water the city was threatened with destruction.

The conduit which is the sole channel of the water supply broke. The break was repaired, but the conduit is now reported to be leaking throughout its whole length. A pipe which allows water to escape will also allow water to enter. The trench in which the pipe lies serves as a drain for an area of country five miles in length, occupied by habitations which are not provided with sewers. The surface-water from this area will, by the force of gravity, find its way into the water supply of Montreal, so soon as the frost leaves the ground. If this water is contaminated by typhoid, an epidemic is inevitable. The conditions will be exactly similar to those which produced the epidemic in Ottawa last year.

To make assurance of an epidemic doubly sure, the city is making a connexion by means of a seven-foot pipe with the Lachine Canal, by which, in case of emergency, the filthy contents of the canal can be diverted into the pipes carrying the domestic supply. This water will be useful in case of fire, but it will be deadly as a beverage. Such a connexion is a menace in itself. The polluted waters of the canal are sure to gain entrance by leakage into the city supply when it is least expected. The citizens will be at the mercy of any absent minded workman who may turn the wrong valve, or forget to close a gate, and experience has shown that such mistakes are not only probable but certain. When the epidemic comes, it will make the record in modern times.

THE LAURENTIAN SOCIETY

THE Laurentian Society for the Treatment and Control of Tuberculosis owes its inception to the generosity and public spirit of two men, Mr. Lorne McGibbon and Dr. Hugh Kinghorn. Six years ago they found that in two of the famous institutions at Saranac, Canadians constituted ten to twenty per cent. of all those patients who were unable fully to meet the cost of living and treatment. It seemed a reproach that so many Canadians should be obliged to accept charity of the people of the United States for lack of adequate facilities for the treatment of tuberculosis in their own country. The society which these men founded, and in which they have continued to be among the most active helpers, now numbers nearly five hundred members contributing ten dollars or more per annum, and supports the Laurentian Sanitarium at Ste. Agathe des Monts, Quebec. A few patients were received at first in temporary quarters until the new building, a model in every respect, was opened in 1911 with accommodation for forty patients. The fame of the Laurentian district is rapidly increasing, not only as a health resort, but also as a summer and winter play ground. The climate from both points of view is ideal, with a maximum of sunshine ; and the altitude at Ste. Agathe, which is within easy reach of Montreal, is moderate, about one thousand four hundred feet.

The fifth annual report, which the society has recently issued, shows that during its first five years one hundred and seventy patients have been discharged from the sanitarium. Of these, ninety-eight are well and following some occupation, and forty-five more, while still invalids, are amongst those recently discharged, for most of whom there is a good prospect of being ultimately restored to health and usefulness. Three could not be traced, and twenty-four are dead. These results are excellent, comparing very favourably with those of similar institutions, and reflect credit on the superintendent, Dr. J. R. Byers, who has been in charge of the work from the beginning.

There is, however, one discouraging feature of all such reports, and that is the small proportion—seldom more than one-fifth—of patients received in the incipient stage of the disease, when it is readily and permanently curable with a comparatively short period of treatment. This means that the public has yet to learn the importance of the initial symptoms of pulmonary tuberculosis, and that many physicians have not the knowledge and skill necessary for its early diagnosis.

The sanitarium is much in need of funds. The patients pay eight dollars a week, while the cost per patient is over twelve. The deficit last year amounted to more than \$8,000. An effort is being made by the society to wipe out a large debt on the building, and also to double its membership, which would yield an income sufficient to meet the operating expenses. The original plans could then be carried out, providing accommodation, which is much needed, for one hundred patients. Some time ago a delegation from the Laurentian Society approached the Quebec government, with a request for a *pro rata* grant to all public institutions in the province caring for those suffering from pulmonary tuberculosis. The results as yet have not amounted to more than fair promises.

It is interesting to consider what is being done in this connexion by other provincial governments. That of British Columbia, for instance, grants an allowance of \$7.00 per week for advanced, and \$4.55 for incipient cases. Patients able to pay are charged \$15.00. Saskatchewan and Manitoba have each voted more than \$25,000 to assist in constructing their sanitariums, in addition to which the former government grants \$3.50 per week for each patient, the latter \$1.50 for those paying less than \$7.00. The Ontario government contributes \$4,000 to the building of a sanitarium, and allows \$3.00 a week per patient, while an additional \$3.50 may be claimed from the municipality from which an indigent patient comes. In Nova Scotia the sanitarium is supported by the government. The patient pays \$5.00 a week, and the govern-

ment makes up the deficit, amounting in 1911 to more than \$7.00 a week in respect of each patient.

There are few causes more worthy of public support and private philanthropy than that which such organizations as the National Sanitarium Association and the Laurentian Society have at heart.

THE eighty-second annual meeting of the British Medical Association will be held at Aberdeen from July 24th to July 31st, 1914. The president-elect is Sir Alexander Ogston, surgeon-in-ordinary to the king in Scotland. The address in surgery will be given by Sir John Bland-Sutton. On the evening of July 31st, Professor J. Arthur Thomson will deliver a lecture on *Vis medicatrix naturæ*.

FOR the past two years, Dr. E. W. Hope, the medical health officer at Liverpool, has been engaged in research work on the sterilizing of milk. He has been able to demonstrate that this can be done by electricity. The method is reported to be cheaper than pasteurization, and to possess the additional advantage of not changing the flavour of the milk, or in any way altering its chemical composition.

IN the annual report of the British Columbia board of health, Dr. De Grey, chief sanitary inspector, insists upon the need for improvement in the sanitary conditions existing in the various industrial camps throughout the province. He also speaks of the danger to health through the want of efficient ventilation and cleanliness in the emigrant railway trains. Another point brought up by Dr. De Grey is that after paying money for considerable periods to so-called hospital and sick-benefit companies, policy holders frequently are unable to obtain the promised medical assistance when in need of it. He suggests that such companies be compelled

to deposit a substantial sum with the government for the protection of members.

A COMMITTEE appointed by the American Hospital Association to study the organization and classification of all those engaged in nursing as a profession, has issued an interesting report. They suggest that all nurses be classified in three grades, namely, "Registered or Graduate," "Certified," and "Household Nurses," according to training and experience. The second grade would include those trained at small or special hospitals, while the household nurses would embrace the large, and useful, class of those who have had little or no prescribed training. The association is anxious to have the advice and opinion of physicians throughout Canada and the United States. A summary of the recommendations of the report, together with a series of questions to which answers are invited, will be found on page 250 of this issue. The task of the committee is one that calls for the active coöperation of the medical profession.

ON February 9th, a meeting was held of the Hamilton board of control and the hospital governors. It was arranged that the hospital will receive this year \$158,000, with a maintenance grant of \$130,885, and an additional grant of \$28,000 for improvements and equipment; the latter is in addition to the \$125,000 recently voted for hospital improvements. The by-law to provide \$200,000 for the new hospital building received its third reading on February 11th. A good deal of difficulty appears to have arisen concerning the site of the new hospital, objection having been raised against the mountain site originally chosen. However, the by-law calls for "the issue of debentures for \$200,000 for the erection of hospital buildings upon the new hospital site on the top of the mountain." The present hospital is greatly overcrowded and, in many ways, it does not meet modern

requirements, so much so that the provincial grant of some seven thousand dollars has again been withheld.

It is proposed to reorganize the medical service of the Canadian Pacific Railway in the province of British Columbia. Under the present arrangement, employees receive medical assistance and a payment of from seventy-five cents to one dollar and a half per month is deducted from their salaries until the full amount has been paid. It is now proposed to establish a uniform payment each month, which will entitle employees, and in the case of married men their families, to free hospital and medical attendance, including medicines, so that no employee will be obliged to incur any liability beyond the monthly payment. An executive committee will be appointed to complete the arrangements and the appointment of medical officers will be in their hands. The matter was discussed at a conference which took place at Nelson on January 13th, when the proposal to form a general medical board was approved. The proposal must now be submitted to the various unions.

IN view of the difficulty experienced throughout the northern part of the province of Ontario in obtaining prompt medical assistance, it has been suggested that medical cabinets might be installed at various points. The objection to such a procedure, of course, lies in the fact that certain drugs might prove extremely harmful if placed in unskilled hands. However, the suggestion has much to commend it and with a responsible person in charge and supplied with bandages, drugs, and other medical aids, the proposed cabinets might well prove of the utmost usefulness in emergency cases.

Book Reviews

THE PROTEIN SPLIT PRODUCTS IN RELATION TO IMMUNITY AND DISEASE. BY VICTOR C. VAUGHAN, M.D., LL.D., and VICTOR C. VAUGHAN, JR., M.D., A.B., and J. WALTER VAUGHAN, M.D., A.B. 12mo, 476 pages, illustrated. Cloth, \$3.00 net. Lea & Febiger, publishers, Philadelphia and New York, 1913.

For fifteen years Professor Victor C. Vaughan has been working at problems which seemed far removed from the current enquiries of bacteriologists here and abroad. Striking as were his results they for long aroused little general interest. To-day, with the publication of this volume, it is impossible not to realize, that instead of pursuing a side-track Vaughan has all along been on the highroad; that he has reached nearer to the centre of things than any previous worker. He has done that which assures him a place alongside of Ehrlich and Metchnikoff as founders of the science of Immunology. This may appear strong praise: it is but necessary to read this work carefully to be assured that it is no exaggeration. There is little or no pretence of literary grace about the book: the artistry in fact is on a par with that of a detective story which gives away the plot in its first chapter, and many of the detailed observations, particularly in the latter half of the book, which appear in the main text might well have been relegated to a series of appendices. This notwithstanding, from the value and thoroughness of the observations, the book cannot fail to be read with the keenest interest by all students of immunity, and, what is more, so thorough is the treatment, so consonant are the experiments detailed and their results, that the reader cannot but accept Professor Vaughan's main deductions, cannot but see that he affords a theory as distinct from an hypothesis, a theory amply substantiated by his abundant findings.

The weak point of Ehrlich's side-chain theory was that it regarded the cell, or rather the cell substance, as the unit: the cell substance as such was supposed to possess the different orders of receptors and side chains. This very vagueness, honest as it was, prevented any clear conception of the chemistry of immunity.

Vaughan, like the writer of this notice, has for long years been of the opinion that the proteid or proteidogenous molecules of the cell, in their structure and constitution, with central ring and attached side chains of various orders, afford the basis from which to build up our knowledge of the phenomena. In accordance with this view he began a study of the "protein split products," i.e., of the properties of the substances obtained by the chemical dissociation of various orders of proteins, including among these, the bodies of bacteria, which his researches showed are in the main composed of proteins—nucleoproteins, or glyconucleoproteins. He found that if he subjected these bacterial bodies or any pure protein to the action of a 2 per cent. solution of caustic soda in absolute alcohol, he could split them into two parts, the one soluble, the other insoluble in alcohol. Separated thus, one portion is poisonous, and in relatively small amount will give all the symptoms of anaphylactic shock, the other is non-poisonous.

This is not the place in which to detail fully Professor Vaughan's progressive series of observations upon this matter; these will be found laid down clearly in his work. Suffice to say that starting from these observations, he and his sons demonstrate that sensitization (anaphylaxis) is the first stage in the development of the condition of immunity, and at the same time indicate very clearly the chemical basis of this process of immunization, showing more surely than ever before that we deal with phenomena akin to those of digestion in which the body cells on the one side, or the bacterial on the other, elaborate and discharge ferments or enzymes which in their turn dissociate the protein molecules of the bacteria, or of the animal organism respectively, and it depends upon the powers of the enzymes liberated, as also upon the mechanisms present or developing to counteract these enzymes, whether poisonous or harmless bodies be developed to set up the symptoms of disease.

A PRACTICAL TREATISE ON MEDICAL DIAGNOSIS. FOR STUDENTS AND PHYSICIANS. By JOHN H. MUSSER, M.D., LL.D. Sixth edition, revised by J. H. MUSSER, Jr., B.S., M.D. Illustrated. Price, cloth, \$5.00 net. Philadelphia and New York: Lea & Febiger, 1913.

One approaches this book with great respect. It was written originally by Dr. J. H. Musser, one of the best known of American physicians, and this, the sixth edition, is almost entirely rewritten by his son who bears the same honoured names as his father. Diagnosis is to-day even more important than it was in the days

when the book first appeared, since much more is demanded of the physicians. Patients have become so sophisticated that they are no longer content with vague generalities. They are aware of the precision to which medicine has attained and of the means available to the physician for a precise diagnosis. The merit of this book always was its wealth of clinical material, and that is still retained and increased. The knowledge of medicine has advanced so fast and so far that the appearance of a new edition of this book on diagnosis is especially timely. It will be received with that respect which is its due.

INTERNATIONAL CLINICS, Vol. IV, Twenty-third series, 1913.

Edited by H. W. CATTELL, A.M., M.D. and others. Philadelphia and London: J. B. Lippincott Company. Charles Roberts, Montreal, manager for Canada.

Every intelligent physician is familiar with these clinics, and the wonder is that they have remained so consistently good. The article by Dr. Lloyd on syphilis of the nervous system is especially worthy of note. Dr. Walsh and Dr. Edes write most entertainingly of the psychological element in medicine. Many a pleasant and profitable evening can be spent on this one volume alone.

CAUSES AND CURES OF CRIME. By THOMAS SPEED MOSBY. Illustrated. Price, \$2.00. St. Louis: The C. V. Mosby Company, 1913.

This book expresses the opinions of one of the leading criminologists in America on crime and the criminal. These opinions are based on the premises that crime is, in most cases, the outcome of a diseased mind, that the prison should be reformed, and that the hospital should be more freely employed than the penitentiary. It is only fair to add that, there is a contrary opinion that some men are criminals *in esse*, and that all men are criminal *in posse*. In the United States the cost of crime is given as one-third of the total cost of the government. It is seven times more prevalent in proportion to population than it was sixty years ago, and one in every thirty persons in the United States is defective or dependent. These facts are sufficient reason for this attempt to engage the public attention. The subject is large and extremely complex, and Mr. Mosby has brought to it his best thought. The author is a barrister, but he holds that the suppression of crime is not a legal question but rather a problem for physicians and economists.

MEDICAL AND SANITARY INSPECTION OF SCHOOLS, FOR THE HEALTH OFFICER, THE PHYSICIAN, THE NURSE, AND THE TEACHER.
By S. W. NEWMAYER, A.B., M.D. Illustrated. Price, cloth, \$2.50 net. Philadelphia and New York: Lea & Febiger, 1913.

This book is written by a physician who has had fifteen years' experience in the work of medical inspection of school children, and in their hygiene. It is a guide for physicians, nurses, and teachers, for the physical examination of school children. It contains a statement of the methods by which epidemics in schools shall be prevented, and the physical defects of school children recognized and corrected. The author points out that the total expenditure in the United States on public schools exceeds four hundred million dollars, and in addition there is a permanent investment in school buildings amounting to nine hundred million dollars. It will be gathered from this how large and important an affair medical inspection of schools really is. In many states this inspection is compulsory. The work is comparatively new. It began in Liverpool in 1887, but it was not until 1901 that the London School Boards appointed salaried nurses and assigned to them definite duties. This book contains all that is known upon the subject and should be in the hands of teachers as well as of physicians.

MENINGOCOCCUS MENINGITIS. By HENRY HEIMAN, M.D., and SAMUEL FELDSTEIN, M.D., with an introduction by HENRY KOPLIK, M.D. Illustrated. Philadelphia, London and New York: J. B. Lippincott Company, 1913. Charles Roberts, Montreal, manager for Canada.

This book contains, in compact form, an account of the present knowledge of infection of the meninges by the meningococcus. It is intended for students and physicians rather than for laboratory workers. All the usual authorities are cited and there is a full bibliography at the end of each chapter. The subject is arranged chronologically and presents an accurate picture of the advance in knowledge of the condition. The monograph is founded on a study of cases which were treated in the author's wards. Dr. Koplik writes an introduction in which he refers to the serum devised by Dr. Flexner as "a most powerful weapon," but he is obliged to admit that "much remains to be done to deprive the disease of its terrors." A physician who is in possession of this book will have the best possible equipment for dealing with the isolated cases

which fall under his attention, or with those epidemics which break out so strangely from time to time.

ACUTE ABDOMINAL DISEASES, INCLUDING ABDOMINAL INJURIES AND THE COMPLICATIONS OF EXTERNAL HERNIA. By J. E. ADAMS M.B., M.S. (Lond.), F.R.C.S. (Eng.), and M. A. CASSIDY, M.A., M.D., B.C. (Cantab.), F.R.C.P. (Lond.). Toronto: The J. F. Hartz Company, Limited, 1913.

This book on acute abdominal diseases is the joint product of a physician and a surgeon, both of whom were at one time resident officers in St. Thomas' Hospital, where they had a good opportunity of seeing and treating a large number of cases. Their experiences are set forth in this book from the point of view of the physician and surgeon. Inasmuch as there is no clear distinction between an acute condition and a chronic condition, the authors are obliged to use their own judgement as to the point at which the one condition passes into the other. The book is divided into sixteen chapters, many of which are illustrated, and every condition which is likely to meet the physician or surgeon is fully described and the treatment indicated. The directions for surgical interference are clearly given and the various operations are described in some detail. But the main value of the book is in drawing attention to those conditions which are immediately dangerous to life and, if neglected, pass over into a chronic state from which little relief can be obtained.

ANATOMY AND PHYSIOLOGY—A TEXT-BOOK FOR NURSES. By JOHN FORSYTH LITTLE, M.D., Assistant Demonstrator of Anatomy, Jefferson Medical College, Philadelphia. 12mo., 483 pages, with 149 engravings and 4 plates. Cloth, \$1.75 net. The Nurses' Text-Book Series. Lea & Febiger, publishers, Philadelphia and New York, 1914.

This book reminds us how learned a person the modern nurse has become. Probably no class of workers, men or women, in the community is more efficient in their business than nurses, and if they master all the books which are being written for their use, it will be an easy stage to the mastery of a large part of the field which is now controlled by the physician. Even an honour student in medicine would experience some searchings of heart if he were to test his knowledge by this standard which is set up for nurses.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

DORLAND'S AMERICAN POCKET MEDICAL DICTIONARY. Eighth edition, 32mo of 677 pages. Price, flexible leather, \$1.00 net; thumb index, \$1.25 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

CLINICAL SURGICAL DIAGNOSIS FOR STUDENTS AND PRACTITIONERS. BY F. DE QUERVAIN, Professor of Surgery and Director of the Surgical Clinic at the University of Basle. Illustrated. Translated by J. SNOWMAN, M.D. London: John Bale, Sons and Danielsson, Limited, 1913. Toronto: The Macmillan Company of Canada, Limited.

THE NERVOUS AND CHEMICAL REGULATORS OF METABOLISM—LECTURES. BY D. NOEL PATON, M.D., B.Sc., London: Macmillan & Company, Limited, 1913. Toronto: The Macmillan Company of Canada, Limited.

THE PRACTICAL MEDICINE SERIES. Volume IX, SKIN AND VENEREAL DISEASES. MISCELLANEOUS TOPICS. Edited by W. L. BAUM, M.D., and HAROLD N. MOYER, M.D. Price \$1.35. Volume X, NERVOUS AND MENTAL DISEASES. Edited by H. T. PATRICK, M.D. and P. BASSOE, M.D. Price, each, \$1.35. Price of the series of ten volumes, \$10.00. Chicago: The Year Book Publishers, 1913.

PATHOGENIC MICRO-ORGANISMS. A TEXT-BOOK OF MICROBIOLOGY FOR PHYSICIANS AND STUDENTS OF MEDICINE. By WARD J. MACNEAL, PH.D., M.D. Illustrated. Price, \$2.25 net. Philadelphia: P. Blakiston's Son & Company, 1914.

ANATOMY AND PHYSIOLOGY. A TEXT-BOOK FOR NURSES. By JOHN FORSYTH LITTLE, M.D. Illustrated. Price, \$1.75 net. The Nurses' Text-Book Series. Philadelphia and New York: Lea & Febiger, 1914.

IONIC MEDICATION. THE PRINCIPLES OF THE METHOD AND AN ACCOUNT OF THE CLINICAL RESULTS OBTAINED. By H. LEWIS JONES, M.D. Second edition. Price 5s. net. London: H. K. Lewis, 1914.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE, Vol. VII, No. 2, December, 1913. Price 7s. 6d. net. London, New York, Calcutta, Bombay: Longmans, Green and Company.

A MANUAL OF OPERATIVE SURGERY WITH SURGICAL ANATOMY AND SURFACE MARKINGS. By DUNCAN C. L. FITZWILLIAMS, M.D., Ch.M., F.R.C.S. (Eng.), F.R.C.S. (Edin.). Toronto: The Macmillan Company of Canada, Limited, 1913.

THE DISEASES OF CHILDREN. By SIR JAMES FREDERIC GOODHART, BART., M.D., LL.D., F.R.C.P. Tenth edition, edited and revised by G. F. STILL, M.A., M.D., F.R.C.P. Price \$4.50. Toronto: The Macmillan Company of Canada, Limited, 1914.

THE BIOLOGY OF THE BLOOD-CELLS, WITH A GLOSSARY OF HÆMATOLOGICAL TERMS: FOR THE USE OF PRACTITIONERS OF MEDICINE. By O. C. GRUNER, M.D., (Lond.). Bristol: John Wright & Sons, Limited. London: Simpkin, Marshall, Hamilton, Kent & Company, Limited. Toronto: The Macmillan Company of Canada, Limited, 1913.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Vol. XXXI, 1913. Edited by ARCHIBALD MACLAREN, M.D. For sale by William J. Dornan, Philadelphia.

ESSENTIALS OF BACTERIOLOGY; BEING A CONCISE AND SYSTEMATIC INTRODUCTION TO THE STUDY OF BACTERIA AND ALLIED MICRO-ORGANISMS. By M. V. BALL, M.D., assisted by P. G. WESTON, M.D. Seventh edition, thoroughly revised. Illustrated. Price, \$1.00 net. Philadelphia and London: W. B. Saunders Company. Canadian Agents: The J. F. Hartz Company, Limited, Toronto. 1913.

- CLINICAL DIAGNOSIS AND URANALYSIS. By JAMES R. ARNEILL, A.B., M.D. Second edition, revised and enlarged. Price, cloth, \$1.00 net. The Medical Epitome Series. Philadelphia and New York: Lea & Febiger, 1914.
- FELLOWSHIP EXAMINATION PAPERS FOR THE DIPLOMAS OF THE ROYAL COLLEGE OF SURGEONS, EDINBURGH, FOR SEVERAL YEARS. Price 1s. net; by post 1s. 3d. Edinburgh: E. & S. Livingstone.
- DENTAL EXAMINATION PAPERS FOR THE DIPLOMAS OF THE ROYAL COLLEGE OF SURGEONS, EDINBURGH, AND THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW, FOR SEVERAL YEARS. Price 1s. net; by post 1s. 3d. Edinburgh: E. & S. Livingstone.
- PRACTICAL SANITATION. A HANDBOOK FOR HEALTH OFFICERS AND PRACTITIONERS OF MEDICINE. By FLETCHER GARDNER, M.D. and JAMES PERSONS SIMONDS, B.A., M.D. Illustrated. Price, \$4.00. St. Louis: C. V. Mosby Company, 1914.
- DIAGNOSTIC METHODS. A GUIDE FOR HISTORY TAKING, MAKING OF ROUTINE PHYSICAL EXAMINATIONS AND THE USUAL LABORATORY TESTS NECESSARY FOR STUDENTS IN CLINICAL PATHOLOGY, HOSPITAL INTERNES, AND PRACTICING PHYSICIANS. By HERNERT THOMAS BROOKS, A.B., M.D. Second edition, revised and re-written. Price \$1.00. St. Louis: the C. V. Mosby Company, 1914.
- ESSENTIALS OF GYNECOLOGY. By EDWIN B. CRAGIN, M.D. Revised by FRANK S. MATHEWS, M.D. Eighth edition, thoroughly revised. Illustrated. Price, cloth, \$1.00 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: the J. P. Hartz Company, Limited, Toronto.
- STATE BOARD QUESTIONS AND ANSWERS. By R. GOEPP, M.D. Third edition, thoroughly revised. Price, cloth, \$4.00 net; half morocco, \$5.50 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: the J. F. Hartz Company, Limited, Toronto.

German Literature

THE ABDERHALDEN PREGNANCY TEST.

AT a meeting of the Kiel Medical Society, as reported in the *Muenchener Medizinische Wochenschrift*, No. 31, 1913, Dr. Stoeckel delivered the following address. "The difficulty of diagnosing pregnancy in its early stages need not be dwelt upon, for in spite of much experience and great care, errors are continually made. Still more difficult is the diagnosis of extrauterine pregnancy in many cases; in fact, the difficulty of making a differential diagnosis may be so great in these cases that it is impossible to come to a definite conclusion. And it is in precisely these conditions that it is so important in order to carry out the proper treatment and to decide whether an operation is necessary, to know if one has to deal with a misplaced ovum or an inflammatory process. Hope has been awakened by Abderhalden's test for pregnancy. This reaction depends upon the experimentally deduced fact that albumin introduced into the circulation is broken up by the ferments in the blood just as ingested albumin is broken up in the digestive tract. The pregnant woman is lodging, in the shape of the foetus, a repository of albumin which, although not of a kind foreign to her, is nevertheless a foreign element when introduced into her blood. According to the researches of several scientists, there are carried into the blood stream of the pregnant woman, from the syncytial layer of the intervillous space, free tufts of chorionic material. Veit was the first to build up a theory of the biological connexion of mother and child on this anatomical fact. Abderhalden, beginning at this point, goes on to say that the presence of this syncytial albumin means an importation into the maternal circulation of albumin against which the maternal blood reacts by the formation of protective ferments, in order to make possible a splitting up of the foetal albumin molecules. For the demonstration of this fact Abderhalden instituted first the optic method, and afterwards the dialyzation procedure. The optic method depends on the fact that when a placental peptone solution is brought into contact with the blood serum of a pregnant woman the rotation recorded by the polariscope is greater than that caused

by the control of placental-peptone solution and normal blood serum, depending on the amount of albumin that is being split up. This method presupposes the possession of a special polariscope and careful, hourly-repeated reading of the amount of rotation. It is, therefore, a purely clinical procedure with the testing of which we are at present concerned, without, however, having as yet come to a definite conclusion. The second test is the dialyzation method, and is as follows: in a specially made dialyzation capsule, which has been previously tested as to its permeability to peptone and impermeability to serum, is placed a small piece of placenta that has been rendered absolutely blood-free and 1.5 cc. of hæmoglobin-free serum of a supposedly pregnant woman. The capsule is suspended in a cylinder containing 20 cc. of distilled water, and the whole placed in the incubator for sixteen hours. If there is a splitting up of placental albumin into peptone, the result, when 10 cc. of the dialysate is mixed with .2 cc. of a one per cent. solution of ninhydrin and boiled for one minute, is a violet-blue colour. (The dialysate is of course the water in which was suspended the capsule which, being permeable to peptone, allowed it to pass into the surrounding fluid.—Translator.) Control capsules containing placenta and serum of a non-pregnant woman are of course tested. It is necessary, says Abderhalden, to be very careful with one's technique to obtain satisfactory results. For instance, at a recent gynæcological congress at Halle there was much scepticism expressed about the reaction owing to the unreliable results obtained by many investigators. Abderhalden himself then demonstrated, to the apparent satisfaction of all, that the unreliable results were the fault of clumsy technique, not of the method. Nevertheless our experience here in Kiel leads us to believe that we have not as yet a specific test for pregnancy, and that the Abderhalden reaction cannot as yet lay claim to great importance in the realm of forensic gynæcology."

Of a different opinion are the members of the Royal Gynæcological Clinic of Dresden, as set forth in No. 21 of the same publication. "Our experience with the optic and dialyzation methods," say they, "correspond absolutely to Abderhalden's reports, and to date we have seen no case where the pregnancy test did not correspond to the clinical findings." They claim that their results are due to careful technique; absolute asepsis, careful testing of the permeability of the dialyzation capsules and care as to the exact time of incubating the serum. Moreover, they publish some interesting results regarding eclampsia. Thirteen cases of this

condition were tested by the optic and dialyzation methods, and all showed either a weak positive or negative reaction. (The supposition being that eclampsia is the result of absence of albumin-cleaving ferments in the blood.—Translator.) The conclusion reached by a study of these cases was that the stronger the reaction the better the prognosis. Four cases of tubal pregnancy gave a positive reaction.

In No. 41 of the same magazine, Tschudnowsky, of Jena, writes: "Both of Abderhalden's methods are extraordinarily precise and decided the question of diagnosis in many cases that puzzled the most experienced gynæcologists.

Abderhalden himself, in No. 50 of the magazine, claims that out of six hundred diagnoses made at the Physiological Institute of Halle University, all but one or two have been correct. This does not include occasional errors that have been the result of poor technique, and which were rectified later.

London, Ontario.

G. C. HALE.

Obituary

DR. A. G. BUGBEE, of Derby Line, near Sherbrooke, Quebec, died January 22nd, in the ninetieth year of his age, two days before his ninetieth birthday. The greater part of his long life was spent in the district of Derby Line, where he was in practice for many years. When failing health compelled him to give up his professional work, Dr. Bugbee devoted himself to charitable efforts; he was the founder and endower of the Bugbee Commercial College at Stanstead. He is survived by his wife.

DR. FAIRBANKS, of Cobourg, died suddenly as a result of heart failure on Monday, January 19th. Dr. Fairbanks was born at Oshawa, and was educated at Trinity College School, Port Hope; his medical training was taken at Trinity Medical College, Toronto. He did not practice, however.

DR. JAMES SPENCE, of Thessalon, died January 19th. Dr. Spence was well known, and his sudden death, which was the result of an accident, is much regretted throughout the district.

DR. GEOFFREY STRANGE BECK, of Port Arthur, died at Toronto, January 12th, in the fifty-fifth year of his age. Dr. Beck was a graduate of Trinity University, taking the degree of M.D. in 1881. He then took a post-graduate course in Great Britain. On his return to Canada, he went into practice at Port Arthur. He made many friends and soon acquired a large practice, but for some years he suffered from poor health.

DR. NINIAN CALVIN SMILLIE, of Montreal, died at Ottawa, February 12th. Dr. Smillie was born in the Eastern Townships in 1858. He was educated in Montreal and graduated from Bishop's College. For fifteen years after graduation he was port physician at Gaspé Basin. He then spent two years studying in Europe, after which he returned to Montreal and took up practice there. He is survived by his wife, one son and one daughter.

DR. D. D. McDONALD, physician in attendance at the Maritime penitentiary, Dorchester, died January 23rd. Dr. McDonald practised for some years in Petitcodiac and was much respected throughout the county. About five years ago he was appointed to the position which he occupied at the time of his death. He is survived by one daughter.

News

MARITIME PROVINCES

DR. W. H. HATTIE has resigned from the position of medical superintendent of the Nova Scotia Hospital, to take over the duties of chief health officer for the province. Dr. Hattie has been superintendent of the hospital for over fourteen years. Dr. F. E. Lawlor, who has served as assistant physician and assistant superintendent for the past twelve years, has been appointed medical superintendent. Dr. E. F. Moore has been appointed assistant physician.

At the January session of the Westmoreland County Council, the maintenance grant made to the Moncton Hospital was increased by \$500, and the special grant of \$2,000, which was voted last July, was made available. The accommodation at present

provided in the hospital is overtaxed and additional space is required for patients and nurses.

IN consequence of a slight outbreak of scarlet fever, the schools at Marysville, New Brunswick, were closed for a short time in January.

THE plans have been prepared for a new building for the General Hospital at St. John, New Brunswick. The proposed building will consist of four stories and will contain accommodation for one hundred and forty patients. At first it was thought that the old hospital might be enlarged, but this plan has been abandoned. The cost of the new building will be about \$279,000. This fact, taken in connexion with the annual grant of \$30,000 required to maintain the new sanitarium for tuberculosis and an additional \$10,000 for furnishing the new sanitarium, has led to some hesitation and the matter is still under discussion. The sanitarium will accommodate fifty-three patients.

DR. JOHN FRANCIS TEED, of Dorchester, has been appointed surgeon at the Maritime penitentiary, in succession to the late Dr. D. D. McDonald.

THE sixth annual meeting of the Harbour View hospital Board, Sydney Mines, was held February 3rd. The debt on the new wing, which cost about \$23,000, has been paid off with the exception of \$4,000. Three hundred and fifty-eight patients were admitted during the year, and twenty-three deaths occurred.

THE fourteenth annual convention of the Canadian Association for the Prevention of Tuberculosis will take place at Halifax on the 13th and 14th of July.

ONTARIO

The following cases of communicable disease were reported by the local boards of health of the province during the month of January: Smallpox, 76; scarlet fever, 320, 3 deaths; diphtheria, 201, 29 deaths; measles, 184, 3 deaths; whooping cough, 89, 3 deaths; typhoid fever, 48, 14 deaths; tuberculosis, 126, 64 deaths; cerebrospinal meningitis, 7, 4 deaths. Total, 1,151 cases, 120 deaths. In January, 1913, 1,709 cases and 237 deaths were reported.

St. Michael's Hospital at Toronto is to be enlarged during the summer. A new nurses' home is also to be built. It is the intention to expend about one hundred and fifty thousand dollars on these improvements.

During the twelve months elapsing between November 15th, 1912, and November 15th, 1913, the cases of contagious disease reported in Kingston were:—Typhoid fever, 34 ; measles, 28; scarlet fever, 18; diphtheria, 56.

Nine cases of smallpox were recently discovered in one household at Mapleton. It is suggested that the infection was brought by two of the sons who returned from Illinois. Fourteen cases of the disease have been reported at Belmont also.

A meeting of the Peterborough Health Association was held January 21st, when a resolution was passed to ask the city council to grant \$10,000 towards a sanatorium for cases of tuberculosis. If the city will grant the desired amount, the association is prepared to collect an equivalent sum, in which case the provincial government will contribute \$4,000. Thus \$24,000 would be available.

AN outbreak of diphtheria occurred in Ingersoll at the end of January, and it was found necessary to close the schools. The disease was also prevalent in St. Thomas.

It is probable that a hospital will be built at Fort Frances.

DR. J. C. BELL, of Merlin, recently brought an action against the township of Raleigh. Dr. Bell was medical officer of health for the township during the year 1912, but at the beginning of 1913 his appointment was cancelled. The facts, as reported, are that Dr. Bell insisted that residents should cease from discharging sewage into an open drain that runs through the township. This created much dissatisfaction, and Dr. Bell claims that it resulted eventually in the cancellation on his appointment. He therefore claimed \$800 on the grounds of wrongful dismissal. The case was dismissed.

DURING 1913, 907 patients were treated in the Brantford General Hospital; in 1912, the number treated was 776. The

number of days' treatment given last year was 17,584, and the average daily cost amounted to \$1.30 for each patient.

LAST December the death rate among children under one year of age in Toronto was 290 per 100,000. This is a slight increase as compared with December, 1912, when it was 270.

AT a meeting of the Oxford County Council, which was held on Thursday, January 19th, the grant given to the Woodstock Hospital was increased from \$1,000 to \$1,220. It was decided to grant \$500 to the Ingersoll Hospital.

THE Strathroy General Hospital was formally opened by Dr. Bruce Smith on February 9th.

DR. MCPHERSON, the medical officer of health at Peterborough, has resigned.

AN epidemic of scarlet fever is reported from Mount Forest. Over forty cases have occurred. A number of cases have also been reported in Owen Sound.

THE question of enlarging the isolation hospital at Ottawa is under consideration.

DR. H. A. MCCALLUM, of London, president of the Canadian Medical Association, has accepted an invitation to appear on the programme of the Summit County Medical Society at Akron, Ohio, on May 5th. Dr. MacCallum is the only honorary member of this society, which was organized in 1842. The secretary, Dr. A. S. McCormick, is a Canadian, and a member of the Canadian Medical Association.

IT is the intention to submit a by-law to the ratepayers of Goderich with the object of providing \$15,000 towards a new hospital. A building on the Cameron estate has been purchased and, if the grant is made, the money thus provided will be spend on equipment and any improvements that may be necessary to convert the building into an efficient hospital.

QUEBEC

DURING the past year, 5,813 patients were admitted to the Royal Victoria Hospital, Montreal. The days of treatment

given numbered 113,888; 5,799 patients were discharged and 373 died. The financial statement for the year shows a deficit of \$11,664.10. The daily cost of maintenance was \$2.08 for each patient, one cent more than in 1912.

IN 1913, 1,391 admissions were made to the Western Hospital, Montreal. There were 87 deaths, 27 of these being accident cases where death resulted within forty-eight hours of admission to hospital. The work of the out-patient department increased greatly during the year. Unfortunately, the hospital is burdened with a considerable overdraft; the need for more accommodation also is a serious consideration.

THE sixty-ninth annual report of the Montreal Maternity Hospital covers the twelve months ending September 30th, 1913. During this time, 1,243 patients were admitted and 223 were attended to in the outdoor department. The births numbered 1,108. Dr. W. A. G. Bauld is the medical superintendent in succession to Dr. McEachran, who is now in charge of the Vancouver General Hospital.

AT a meeting of the governors of the Montreal General Hospital, held on February 17th, Dr. E. M. von Eberts was elected to a position on the senior surgical staff.

THE twenty-seventh annual meeting of the Protestant Hospital for the Insane, at Verdun, was held February 4th. Dr. Burgess, who has been the medical superintendent for the past twenty-four years, stated that 114 private and 133 public patients had been admitted during the year; 22 per cent. of these were of foreign birth, among them being a good many Russians; 121 patients were Canadian born. Thirteen deportations were made during the year. The death rate was 10.10 per cent. The total number of patients under treatment during the year was 910. On the conclusion of his report, a motion was passed to the effect that some suitable acknowledgement should be made of Dr. Burgess's twenty-five years of service. The financial report showed a deficit of \$2,527.

FRESH cases of smallpox continue to be reported throughout the province. The majority of the municipalities have now passed by-laws to make vaccination compulsory, but this has not yet been done by about one-third of the number, and there is still

great laxity concerning notification of the disease. Proceedings are being instituted by the provincial authorities against the municipality of Chambly Basin for failure to report cases of smallpox which have occurred there.

THE town of Longueuil was sued recently for fifty dollars by Dr. Ph. Lesage, who claimed that since he paid a doctor's licence, he should not be expected to pay the tax levied on druggists. The amount claimed has been paid during the past five years. The court ruled that, as he kept a prescription book and registered sales, he must pay the tax.

THE cases of contagious disease reported in Montreal during the week ending February 7th numbered 152, 25 of them terminating fatally. Among them were, 15 cases of smallpox, 37 cases of tuberculosis, 30 cases of diphtheria, 53 cases of scarlet fever, 3 cases of typhoid fever, 5 cases of chicken-pox, and two cases of measles.

THE new building of the Sherbrooke Hospital is now practically completed. The old building will be remodelled, and should be finished by the end of June, when the formal opening of the hospital will take place. During the year 1913, the average daily cost of maintenance for each patient was \$1.60.

DR. J. N. ROY has returned to Montreal after spending fifteen months in Africa and South America, where he has been engaged in research work on the comparative pathology of negroes and Indians.

MANITOBA

IN the Children's Hospital, of Winnipeg, 1,169 patients were treated during the year 1913. This is a large increase when compared with the work during 1912, when 651 patients received treatment. The deaths numbered 144 in 1913, and 118 in 1912.

THE following are the cases of contagious disease reported in Portage La Prairie during 1913: measles, 6 cases, 1 death; scarlet fever, 3 cases; diphtheria, 16 cases, 2 deaths; smallpox, 8 cases; tuberculosis, 16 cases, 8 deaths; typhoid fever, 22 cases, 2 deaths. The total number of deaths among residents during the year was ninety-four.

THE patients who received treatment in the Victoria Hospital at Winnipeg during the year 1912-1913 numbered 1,062. The average duration of treatment in hospital was 12.3 days, and the death rate was 2.5 per cent. The average cost of maintenance for each patient was \$1.05 a day.

DURING the year ending November 30th, 1913, 739 patients received treatment in the Portage La Prairie Hospital. The daily average cost for each patient was \$1.35, which is less than in 1912, when it amounted to \$1.40. It is probable that a nurses' home will be commenced very shortly.

THE following cases of communicable disease were reported in Winnipeg during the month of January: scarlet fever, 114; chicken-pox, 53; measles, 58; diphtheria, 40; erysipelas, 10; tuberculosis, 30; typhoid fever, 8; whooping cough, 31; mumps, 1.

ALBERTA

THE following is the list of contagious diseases reported in Lethbridge during the past twelve months: scarlet fever, 19 cases, 1 death; diphtheria, 5 cases; typhoid fever, 100 cases, 5 deaths; chicken-pox, 71 cases; measles, 354 cases, 5 deaths; German measles, 5 cases; tuberculosis, 2 cases, 1 death; smallpox, 2 cases; cerebrospinal meningitis, 1 case. The number of births registered was 231, and of deaths 189.

It is the intention to build a sanatorium for tuberculosis at Calgary; the cost will be about thirty thousand dollars.

REPORTS of outbreaks of smallpox come from various places in the province. Several cases are reported at Cardiff, and at the Indian reserve at Union Lake.

DR. H. B. STACKPOOL has been appointed medical officer of health at Cardston at a salary of fifty dollars a year.

THE new South Side Hospital at Edmonton is in course of construction. When the contracts for the work were let, it was understood that the old hospital grounds would be taken over by the Parks Department, and that, in return, \$54,000 would be credited to the hospital board. However, this has not been done, and

\$62,000 is already due to the contractors. This will be paid, and a by-law will be submitted later on, when the exact amount required to defray expenses is ascertained. Should the by-law be defeated, the amount will probably be charged up in the 1914 taxes.

THE management of the North Edmonton Hospital is to be taken over by the hospital commission.

It is probable that a new isolation hospital will be built at Edmonton. A resolution to this effect has been passed by the committee of the hospital board, who requested that a hospital with accommodation for one hundred patients be built at a cost not to exceed \$250,000, the present site to be abandoned and a site sought on the university grounds. They suggested also that the new hospital should be restricted to the treatment of cases of erysipelas, scarlet fever, measles, diphtheria, and terminal cases of tuberculosis, and that the wooden portion of the present building should be used as a smallpox hospital on the present or such other site as may be obtained.

THE annual meeting of the Alberta Society for the Prevention of Tuberculosis was held at the Calgary Public Library, January 29th. An interesting account of the work accomplished was given by the corresponding secretary. During the year twenty-three deaths from tuberculosis were reported in Calgary. An able address on the history and treatment of tuberculosis was delivered by Dr. J. T. Costello.

THE twenty-third annual report of the Calgary General Hospital shows that the past year has been a busy one; 3,967 patients have been treated. An agreement was made, and took effect on February 15th, 1913, that the expenses incurred by the hospital through the treatment of indigent patients should be defrayed by the city, and in accordance with this agreement, \$16,065 has been paid to the hospital. The equipment has been largely augmented during the year. Some months ago, the hospital authorities agreed to sell to the city two acres of land for \$20,000, on the understanding that the land in question should be used for hospital purposes only. This matter has not yet been definitely settled.

SASKATCHEWAN.

THE provincial government has acceded to the request of the Saskatchewan Anti-Tuberculosis League, that the grant of \$100,000 promised by the government on condition that an equal amount be collected by the League, shall be given if the League is able to show that the amount mentioned has been guaranteed, even although it may not all have been paid. A sanatorium, consisting of an administration building, with accommodation for a few patients, and two pavilions, each with accommodation for twenty-four patients, is being built at Regina, and it is hoped that it will be completed before the end of the present year. Later, it is the intention to add more pavilions. A conservative estimate places the number of deaths due to tuberculosis which occur in the province during the year at four hundred, and since there is in the province no sanatorium for the treatment of such cases, the need for such an institution is evident.

ONE hundred and seventeen patients were treated in the Lashburn Hospital during 1913. The average daily cost of maintenance for each patient was \$2.63. Thirty births and five deaths occurred.

DR. ARTHUR WILSON, of Regina, has been appointed medical officer of health at Saskatoon. The remuneration is \$3,000 a year.

IT has been found necessary to close the Alexandra Hospital at Rosthern until arrangements for the continuation of its work can be made.

BRITISH COLUMBIA

DR. J. J. MASON, formerly of London, Ontario, has gone into practice at Vancouver, where he intends to specialize in gynæcology and abdominal surgery.

ACCORDING to the annual report of the provincial board of health, the following cases of contagious disease were reported in the province during the year ending March 31st, 1913: smallpox, 25; diphtheria, 314; with a mortality of 12.42 per cent.; scarlet fever, 582, resulting in 9 deaths; typhoid fever, 439, 99 deaths. It is probable that the number of cases that occurred is considerably in excess of those reported, and it is suggested that it might be well to

pay a fee of fifty cents for the notification of each case of smallpox, scarlet fever, diphtheria, typhoid fever and tuberculosis. During the year it was found necessary to close fourteen private hospitals and maternity homes because of insufficient equipment, unsuitable premises, or the lack of properly qualified persons in charge.

THE sum of \$25,000 has been granted by the Victoria city council to the Jubilee Hospital. Of this, \$13,000 is to off-set debts incurred by the hospital during the past year; the remaining \$12,000 is granted to assist in the maintenance of indigent patients during the present year. The final plans and specifications for the new hospital were reported as completed in January, so that it is probable that the work of construction will commence very shortly.

THE by-law to grant \$15,000 to the Royal Inland Hospital at Kamloops was passed in January.

DR. H. C. DAVIS has been appointed medical officer of health at Port Coquitlam. He will receive \$400 a year in return for his services.

DR. C. J. FAGAN, of Victoria, who for the past fourteen years has been in charge of the provincial health department, has been superannuated.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Dominion Medical Monthly, February, 1914:

The problem of housing our working people	P. H. Bryce.
Erysipelas	S. Erdman.

The Public Health Journal, January, 1914:

The smoke problem	R. N. Blackburn.
Municipal food inspection	J. G. Rutherford.
The significance of human waste in modern life and its causes.	J. S. Woodsworth
Plague: its varieties and prevention.	W. E. Home.

The Canada Lancet, January, 1913:

Prostatic hypertrophy: its diagnosis	W. J. Macdonald
Breast tumours	R. W. Wesley.

The Canadian Journal of Medicine and Surgery, February, 1914:

Clinical Congress of Surgeons of North America	F. W. Marlow.
Impressions at Fourth Annual Session, Clinical Congress of Surgeons	J. M. Cotton.
Notes on the Clinical Congress at Chicago	R. J. P. McCulloch.
The Harbour of Indifference	G. D. Porter.
The Public Health Act of Ontario	J. W. S. McCullough

Le Bulletin Médical de Québec, January, 1914:

Thorax paradoxal.	F. Dubé.
Le problème de l'habitation	E. Nadeau.

L'Union Médicale du Canada, January, 1914:

Les conquêtes de l'hygiène moderne	C. N. Valin.
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La Clinique, February, 1914:

Une conception nouvelle de l'asthme et du rhume des foins (hay fever). Conséquences thérapeutiques.	Dr. Wicart.
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The Western Medical News, January, 1914:

Gonorrhœa in the female	A. Croll.
Cancer and precancerous conditions	H. Morell.
Notes from the Far East	E. A. Hall.

The Canadian Practitioner and Review, February, 1914:

The modern treatment of gastric disease	H. J. Patterson.
Municipal food inspection	J. G. Rutherford.
The triple alliance: heart, kidney and arterial disease	O. Klotz.

Medical Societies

CANADIAN MEDICAL ASSOCIATION

ANNUAL MEETING, ST. JOHN, N.B., JULY 7TH TO 10TH

Preliminary Programme (February, 1914)

Address in Medicine: Thomas McCrae, M.D., professor of medicine, Jefferson Medical College, Philadelphia.

Address in Surgery: J. Rutherford Morison, F.R.C.S., professor of surgery, University of Durham, Newcastle-on-Tyne, England.

Address in Obstetrics: Robert Jardine, M.D., professor of midwifery, St. Mungo's College, Glasgow, Scotland.

Public Lecture: "Health problems in Canada," C. A. Hodgetts M.D., D.P.H., Ottawa.

Surgical Clinic at General Public Hospital, by Dr. George E. Armstrong, Montreal.

Medical Clinic at General Public Hospital.

The following is a preliminary list of contributors, with the titles of their papers:

Dr. W. H. B. Aikins, Toronto: "Radium."

Dr. W. G. Byers, Montreal: "Eye strain."

Dr. G. E. Armstrong, Montreal: "Linitis plastica."

Dr. J. Halpenny, Winnipeg, "Tuberculosis of the spleen."

Dr. F. N. G. Starr, Toronto: "Operations on the spleen."

Dr. Nagle, Montreal, "Anæsthetics."

Dr. J. M. Elder, Montreal: "Some points in the treatment of fractures."

Dr. J. T. Case, Battle Creek, Mich.: "Gastric carcinoma" (X-ray Section).

Dr. L. G. Cole, New York: "Diagnosis of gastric and duodenal ulcers, and gall-bladder infections with and without calculi."

Dr. H. A. Pirie, Montreal: "The rugæ of the mucous membrane of the stomach in various diseases of that organ, as shown by the x-rays."

Dr. W. L. Watt, Winnipeg: "The chest."

Dr. W. H. Eagar, Halifax: "Bone lesions."

Dr. Robert Wilson, Montreal: "Radiography of the accessory sinuses."

Dr. S. W. Elsworth, Boston: "Résumé of the evening clinics for the diagnosis of diseases of the chest."

Col. G. C. Jones, Ottawa: "The importance of the recent Balkan war to the Canadian medical practitioner."

Major Lorne Drum, D.P.H., Ottawa: "Militia sanitation and its influence on the public health of the country."

Dr. C. J. Hastings, Toronto: "Industrial diseases and industrial hygiene."

Dr. P. H. Bryce, Ottawa: "The methods of conservation of food products in relation to public health."

Dr. J. D. Pagé, Quebec: "The Feeble-minded and the state."

Dr. A. P. Reid, Halifax: "The housing problem: a business proposition."

The following doctors have signified their intention of contributing papers: James Third, Kingston; H. B. Anderson, Toronto; Harvey Cushing, Boston; I. Olmsted, Hamilton; John Stewart, Halifax; A. Primrose, Toronto; A. E. Garrow, Montreal; Edward Archibald, Montreal; Clarence Starr, Toronto; A. W. George, Boston; George McNeill, London; J. L. Duval, St. John; G. G. Corbet, St. John; H. W. Hill, London; M. M. Seymour, Saskatchewan; J. W. S. McCullough, Toronto; A. F. Miller, Kentville; B. P. Watson, Toronto; F. A. L. Lockhart, Montreal; Franklin Newell, Boston.

In the Section on Public Health, the following committees have reports to make: Medical school inspection, chairman, Dr. Halpenny; applied sociology, chairman, Dr. P. H. Bryce; mental hygiene, chairman, Dr. Helen MacMurchy; venereal diseases, chairman, Dr. J. G. Adami.

Combined Sections: Discussion on intestinal stasis. Speakers to be announced later.

ONTARIO MEDICAL ASSOCIATION

THE Ontario Medical Association holds its annual meeting in Toronto on May 26th to 28th. The programme is almost entirely clinical, and a good many of the sessions will be held in the new General Hospital, which with its large number of beds will supply ample clinical material. The committee hope to have prominent men from abroad to take part in these clinics and operations. No effort is being spared to make the programme excellent in every respect, and a large attendance is practically assured.

THE AMERICAN HOSPITAL ASSOCIATION

REPORT ON THE GRADING OF NURSES

At the last annual meeting of this association, a report was presented by a special committee which had been appointed to study the question of the classification and grading of all those engaged in nursing for hire. This report, which is very thorough, has now been issued, and the recommendations of the committee may be summarized as follows:

A system of grading similar to that which exists in the teaching profession. The various classes or groups of nurses to be reduced as rapidly as possible to three—registered or graduate nurses, certified nurses, and household nurses—with a recognized standard of instruction for each class, as is the case with teachers.

GRADE A: REGISTERED OR GRADUATE NURSES. This grade shall include regularly trained hospital graduates who have met the requirements recommended by the American Hospital Association, or who are registered or eligible for registration, in such states and provinces as provide for registration.

GRADE B: CERTIFIED NURSES. This grade shall include those who have taken courses of training of not less than one year in special hospitals, or in hospitals which are unable to comply with the standards for complete training fixed by the American Hospital Association in 1909, or who are for other reasons unable to meet the requirements of Grade A, but who have had not less than one year of hospital training.

It shall also include those who have met the theoretical requirements for this grade, and have acquired experience under proper supervision in private homes, for a period of not less than

one year and four months, or sixty-eight weeks, during which time not less than twenty different patients have been cared for, including medical and maternity patients.

GRADE C: HOUSEHOLD NURSES. This grade shall include all nursing for hire who are not eligible for and not included in either of the other classes or groups, those who have taken short courses by class instruction or secured private tuition, and also the very large group of workers who have had no prescribed training, who have been pressed into this form of service by physicians, in order to meet the great demand for this class of helpers. The term "Household Nurse" explains itself, and signifies a nurse who, besides assisting in the care of the sick, assists also with the care of the home, in which there is sickness. The term "attendant nurse" is suggested as a possible substitute, if preferred.

The foundation studies in bedside nursing and allied subjects, usually covered in the first year, to be the same in all hospitals, irrespective of size, or of class of patients.

Grade B, or certified nurses, to be trained in small hospitals of under 25 beds, and in special hospitals, sanitarium, convalescent homes, etc.

That as rapidly as possible, city or county organizations and centres be brought into existence to be devoted to the specific purpose of supplying efficient nursing to middle-class families and to standardizing household nursing.

That a fully trained hospital graduate nurse be in charge of the details of such nursing in each centre under the supervision and direction of a representative board, as is the case in a small hospital serving a community, or a visiting nurse centre.

That a serious effort be made through organization to effect a better distribution of hospital graduate nurses and to secure the more general use of such nurses in acute cases, the ultimate aim to be to fit the nurse to the needs of the case, providing a graduate nurse where a high degree of skill is needed, and a less skilled and less expensive worker where such will fully meet the need.

A recognized minimum standard of instruction in practical nursing to be required of all who nurse for hire, so soon as local facilities for household nurses to acquire such instruction be provided.

That in each institution and training centre, a course of instruction in maternity nursing be provided for.

That active effort be made to secure the coöperation of the members of the medical profession and of public health officers,

in establishing an efficient system of household nursing for families of moderate means in each community.

In order to secure this coöperation, the committee earnestly request physicians to forward answers to the following questions to Dr. Renwick R. Ross, superintendent, Buffalo General Hospital, Buffalo, N.Y.:

1. In your opinion, is it possible to meet the nursing needs of the average community in city, town and country, in the United States and Canada with graduate nurse service alone?

2. If, in your opinion, only graduate service should be used, will you kindly present an outline of a practical comprehensive programme for supplying graduate service to all classes needing continuous nursing?

3. If more than one grade of nurse is a necessity, will you please state how many grades you consider necessary? How would you classify nurses so as to include in your classification, all who nurse for hire?

4. Will you kindly suggest a substitute term for the Grade B or "certified nurse," as recommended by the committee on grading of last year, if you consider that some better term should be used to designate nurses trained in special hospitals or hospitals unable to give a full training. Please state whether or not you are satisfied with the distinctive terms recommended by the committee. Give briefly your reasons if not satisfied.

5. If several grades seem to be necessary, how and where should the several grades be trained?

6. In view of the fact that many tuberculosis hospitals find it impossible to secure sufficient graduate nurses to care for their patients, what measures would you suggest for meeting the nursing needs in such institutions.

7. If training is given in a tuberculosis hospital, how long should the course be, and how would you classify those completing such a course?

8. In view of the fact that there is a constant and pressing demand for maternity nurses in homes of moderate means, what measures that are practicable for the average community would you suggest for meeting this need, and how should such nurses be classified?

9. What constructive recommendations would you make with a view to improving on the plans presented by the committee on the grading of nurses in the report submitted to the association at the Boston Convention?

10. Will you kindly suggest to the committee of this year any feasible plans which occur to you for improving the quality of home nursing now being received by those who cannot afford graduate nurses?

THOMAS HOWELL, M.D.	EMMA A. ANDERSON
WILLIAM O. MANN, M.D.	R. W. BRUCE SMITH
CHARLOTTE A. AIKENS	RENWICK R. ROSS
IDA M. BARRETT	

THE ACADEMY OF MEDICINE, TORONTO

At the December meeting of the Medical Section of the Academy of Medicine, the programme was a clinical one. The cases and reports of cases were all of special interest and brought out a good discussion.

ELEPHANTIASIS: Dr. H. B. Anderson exhibited a case of elephantiasis. This patient, a stenographer and unmarried, was twenty-nine years of age. In her previous history she had typhoid and malarial fevers, and at present she is troubled with headache due to eye strain. The case was before the Academy, October 7th; at that time the statement of the case was that at fifteen years of age her ankles began to swell, and this enlargement had continued for the last fourteen years, until there was found a uniform swelling of the legs with no pitting on pressure and no puffiness. The swelling was confined to the lower extremities. One leg, the left one, was very much enlarged, its circumference at the middle of the thigh being twenty-four inches, and the circumference of the calf twenty-three inches, the right thigh twenty and a half inches, and the right calf nineteen inches. The swelling on both sides extended up to the groin. The blood examination was negative, no filaria being found either of diurna or nocturna variety. Also there was no eosinophilia. On the treatment of rest, bandaging, and the use of thiosinamin, marked improvement ensued. In two months the measurements were reduced by a maximum of eight inches, and a minimum of six. As a great deal of improvement took place before the administration of the medicine, probably by compressing the lymph from the lymph places, it was difficult to say how much of the improvement was due to the thiosinamin. There is no doubt the case is due to filaria, but this parasite was not found in the blood.

MUSCULAR DYSTROPHY: Dr. Julian Loudon presented a case of muscular dystrophy. Relating shortly the peculiarities of the disease, Dr. Loudon said that muscular dystrophy was a disease of the muscles differing from the spinal forms such as progressive muscular atrophy, and in children spinal muscular atrophy. The general characteristics of this disease to note are, first, the heredity; second, distribution of the atrophy; third, absence of fibrillary twitching; fourth, diminution in electrical excitability but no typical reaction of degeneration, this showing to faradism as well as to galvanism. The disease he classified under the headings:— (1) Simple atrophic. (2) Pseudo-hypertrophic, here there is atrophy with the false hypertrophy. (3) Erb's juvenile or scapular form. (4) Facio-scapulo-humeral form where the muscles of the face, especially around the mouth, and sometimes around the eyelid, are involved. (5) Pelvic type. (6) Myotonia atrophica. (7) Transitional form. (8) Distal type. A characteristic sign for diagnosis is that these patients, when arising from the recumbent to a standing posture, turn first into a prone position and drawing up the feet rise in that way. The gait is waddling and the pelvis is raised unduly. Also the gait is high stepping, and it is difficult for the patient to climb stairs. The case presented was Erb's juvenile form of the muscular dystrophy. The patient had no atrophy of the muscles in the lower extremities, and the ordinary superficial reflexes showed no change from normal. This young girl had three sisters married and quite healthy; three sisters younger than herself, quite healthy. She showed a marked lordosis and drooping of the shoulders, with weakness of the shoulder girdle. The protruding abdomen and waddling gait were features of the case. It was a case of congenital disease.

LUPUS VULGARIS: Dr. King Smith presented a case of lupus vulgaris. The patient, a female, had had lupus for nineteen years and it now had progressed over a greater part of the lower right side of the body and upper right thigh.

PEMPHIGUS VEGETANS: Dr. King Smith also reported a case of pemphigus vegetans which had presented difficulties in diagnosis. The patient was shown to the International Medical Congress. Some disagreed about the diagnosis, but Sir Malcolm Morris called it pemphigus vegetans. The case was unique in that it had lasted seven years.

RADIUM THERAPY

ANGIOMA: Dr. G. S. Young presented a case of angioma which

had not yielded to operation, but had been successfully treated with radium applied by Dr. W. H. B. Aikins. Patient was seen by Dr. Young some nine months previous to the date of exhibition. He came to Dr. Young at that time with a growth that had been present for a number of years, but now began to be painful. In the preceding seven or eight years this man had had two operations performed for the relief of the condition, but improvement was only temporary. The tumour, before radium treatment, projected about one inch from the surface of the face and extended over a large area, At the last operation this entire growth was removed, but it was not very long until it was as large if not larger than before. Inside of two weeks after radium treatment was begun the growth had markedly decreased in size, and the patient now is completely cured. The result was certainly spectacular. The treatment of this case was by the application of radium for forty hours, and the injection of twenty-one hypodermics of radium salt.

PAPILLOMA OF THE MOUTH: Dr. Aikins then presented a case which had been referred to him by Dr. B. Z. Milner. This was a young lady, aged twenty-three, first seen in April, 1913. In December, 1911, the patient had noticed a small lump in the upper gum on the right side. The lump became larger and she consulted Dr. Milner in February, 1912, but not again until November, 1912, when Dr. Milner excised the mass and removed the wisdom tooth. The pathologist's report was a benign papilloma. When the patient commenced treatment there was a mass of spongy tissue on the alveolar margin of the upper jaw, and also some on the lower. The tissues broke down very rapidly with bleeding. Under two applications of a tube of radium the papillomatous mass has disappeared and left a smooth healed margin. This case illustrates very well the action of radium on ordinary warty growths. In the same way warts on the skin can be made to disappear readily and without discomfort.

EPITHELIOMA OF THE SKIN: The patient was a man aged seventy-seven, referred by Dr. Charles Foster in February of this year. About three years ago the ulcer appeared below the right ear. It increased in size slowly, and when the patient was first seen it was one and a half inches by five-eighths inch in area. The edges were hard, thickened, and everted, and the condition was definitely epitheliomatous. The lower edge of the auricle was also involved. After three heavy exposures to radium healing gradually took place and was completed in about two months.

RODENT ULCER: Mr. W., aged seventy-seven. An ulcerated

lesion began about twenty years ago in the nasal fold of the left side of the face. When seen in April of this year it was one inch in diameter with very thickened, hard, raised edges. The ulcerated part extended through almost to the mucuous membrane of the lip. Various treatments had been used such as cautery, caustics, ointments, etc. He had x-ray treatment seven years ago. Radium used at intervals, and complete healing has occurred.

Dr. Aikins also gave lantern views of several cases he had treated:—

1. Angioma of the upper eyelid in a young infant, which caused considerable deformity. Within two months after the use of radium the mass had almost entirely disappeared.

2. A case of lupus vulgaris which was referred by Dr. James Third, of Kingston, in May, 1911. The condition was of about ten years' duration. It began on the mucous membrane of the left nostril and gradually spread. Various treatments were used as cauterization, electrolysis, x-rays, curettage. In 1905, patient's general health was very poor and the condition extended, and perforated the septum. Since then the skin at the alar margins had become involved, and shortly before Dr. Aikins saw her, nodules had appeared on the left cheek. The nose when first seen presented a most distressing appearance, the margins of the nostrils being covered with large unhealthy granulations. There was a free foul discharge from the nostrils. Very heavy destructive doses of radium were employed, and as a result the diseased tissue has been removed, and the nostrils now present a healed margin. The disease present inside the nasal cavity was treated by radium tubes, which were inserted into the nostrils. On the cheek the nodules present have cicatrized. The patient's general health is not very good, and close watch has to be kept over the condition for fear of a recurrence of the disease. The present local appearance is considered very satisfactory.

3. The patient, who had been referred by Dr. H. L. Anderson, of Niagara-on-the-Lake, Ontario, in September, 1911, had an epithelioma behind the left ear, which had started some four years previously. At the date mentioned the area was as large as a fifty cent piece with raised, hard everted edges. The part was curetted under cocaine and a radium plaque with one lead screen left in position subsequently for twelve hours. When seen a month later there was still an area three-eighths of an inch in diameter, which had not yet healed, but was quite healthy looking. The healing process continued and the condition had remained satis-

factory since then. Photographs were shown to illustrate the condition before and after treatment.

4. Lantern slides were given showing the results obtained by radium treatment in a very large nævus which caused great disfigurement. The patient was a young man. The skin of the face was of a deep purple red studded with angiomatic nodules. There was considerable involvement of the lip extending through to the mucous membrane. On pressure the blood could be driven out to a certain extent, but not entirely. The second photograph showed the result six months after radium treatment was begun. The nodular appearance had disappeared, the distorted lip was much improved, and the colour had faded to a very considerable extent, so that the patient was more than satisfied with the result.

PROGRESSIVE MUSCULAR ATROPHY: Dr. J. H. Elliot presented a case of progressive muscular atrophy. The patient was one from Dr. Anderson's service in St. Michael's Hospital. Previous to this he had been compelled to give up his employment as a boiler maker because of weakness in his hands, making it impossible for him to hold and work the compressed air riveter apparatus. An examination of this patient showed that he could not grasp firmly with the hand, and there was weakness of the muscles of the forearm and marked atrophy of the interossei muscles. The biceps and triceps muscles were also weakened, and in addition to the atrophy there were sensory changes. Tactile sensation was not lost but very much altered. He could not distinguish readily whether he was being pricked with the head or with the point of a pin. When pinched he felt it but there was little pain. The sensation of heat and cold was practically lost. The most pronounced changes were in the distribution of the ulnar nerve. The most marked disturbance was in the right hand, the left being stronger and exhibiting very little atrophy. The left foot was weaker than the right and both feet showed a partial anæsthesia. There was no progress of the disease during the two months in hospital, but there had been no further loss of strength. There was no Rombergism present, the pupil reflexes were normal. The clinical picture is that of progressive muscular atrophy, but with the added sensory changes there is the question whether this is not a case of syringomyelia. The Wassermann reaction was negative.

Dr. Loudon discussing the case said he had had opportunities to see the patient before the meeting and that this loss of sensation was not only to heat and cold, but to all forms of sensation, therefore this could not be a case of syringomyelia. From the symptoms

presented he would think of some peripheral lesion involving both the sensory and the motor sides. For example, it might be a case of cervical rib, and he would not care to say that this was not so until an *x*-ray had been taken. If not cervical rib then he would consider it a case of syphilitic disease, but this seems to be ruled out by a negative Wassermann. The other disease one would think of was lead poisoning. He did not consider it a case of syringomyelia nor a spinal cord condition, and it is not progressive muscular atrophy. Dr. Graham Chambers asked whether the anæsthesia corresponded to the peripheral type or to the central type. In reply it was stated that the anæsthesia was distributed over both hands and both legs fairly equally, and on the right hand it was distributed especially over the area of distribution of the ulnar nerve.

THORACIC ANEURISM: Dr. J. H. Elliot gave the following history of an aneurism case, and presented the specimen removed from the autopsy. A man who had been ill three months came into St. Michael's Hospital because of pain in the chest. He was in the hospital some eighteen months, and then died of hæmoptysis. The post-mortem finding was an enormous dilation of the ascending arch of the aorta. During life there was no diastolic murmur, but there was a systolic one over the area of the aneurism. Death was due to perforation into the lower part of the upper lobe of the lung and hæmorrhage into the lung. The clinical fact of interest is that he developed this enormous aneurism in three months' time. The Wassermann was positive and the *x*-ray showed the shadow of the tumour.

HICCUGH: Dr. Brefney O'Reilly reported a case of hiccough. This occurred in a female patient under treatment for cirrhosis of the liver. It was a very serious form in which all the usual routine treatment proved of no value. When it seemed as if there was no hope and the patient was dying, the ears were searched and wax was removed. Since that there has been no return of the hiccough.

ASTHMA: Dr. O'Reilly also reported a case of asthma caused by the presence of a parrot. Paroxysms occurred whenever the patient was in the same room as the parrot. She was completely relieved when the offending ætiological factor was removed.

Dr. Fotheringham reported a case of asthma which was brought on as a result of eating strong cheese. When the cheese was prohibited there was no more asthma.

Dr. Marlow showed a specimen of a hard concretion which had been coughed up by a woman who had had asthma for eight years. During this period she was subject to paroxysmal attacks of cough-

ing, and it was during one of these attacks that she coughed up this little calcerous substance one-half inch in length. These attacks had developed frequently, and after losing one of her false teeth, but she had forgotten about this until after she had coughed up this specimen. Dr. Elliot considered this a concretion formed in the lung itself and later cast off.

Dr. J. H. Elliot referred to a patient who had asthmatic attacks only when she went out in the wind. It was found that her attacks were due to emanations from horses.

Dr. J. F. TenEyck reported two cases of asthma, in each of which a cure was effected by change of place of residence.

THE subject discussed by the members of the Sections of Medicine and State Medicine, Academy of Medicine, Toronto, January 15th, was "Venereal disease in relation to public health."

Syphilis as it affects our own community, as indicated by the Wassermann reaction, was dealt with by Drs. Gordon Bates, G. S. Strathy, Duncan Graham, and E. W. Mann.

Drs. Bates and Strathy gave the results obtained by them through the Wassermann test, performed in 1,200 cases. These they divided into three classes, those venereally infected, those infected by marriage, and hereditary cases. In the last named class, 50 children at the Children's Hospital gave positive reactions, but in only one instance was another child of the same family found to be infected. The parents of 37 suspected syphilitic children were examined; 25 were cases of latent syphilis, the remaining 12 gave no history of the disease. In the case of the 50 children found to be infected, most of the mothers gave no history of infection, yet must have been infected. One hundred patients were examined at the Orillia Hospital for the Feeble-minded. Three were positive, two of which probably were not infected innocently. In addition, 30 defective children were examined at the Children's Hospital, and none of them gave a positive reaction, save two juvenile paretics. From this it would appear that syphilis does not play a large part in the production of feeble-mindedness. Few cases were reported of those infected through marriage. Of 453 cases venereally infected, 100 were from the Toronto Hospitals for the Insane, and 95 of them were general paretics. At the Hospital for Incurables, 40 suspicious cases were examined and 20 gave a positive reaction; an additional

four were cases of tabes. Hence about 12 per cent. of the inmates were brought there by syphilis. Of 16 physicians who gave positive reactions, 15 were infected innocently. In all, 528 patients gave positive reactions. It was observed that among the poor, the wives and husbands of syphilitics as a rule reacted positively, whereas the contrary was the case among the richer patients. This probably is due to the lack of persistent treatment among the poorer classes.

Dr. Graham said that of the total number of cases admitted to the Toronto General Hospital from August 11th to December 13th, 1913, in all 412, it was proved by the Wassermann reaction that 180 had syphilis. According to occupation the incidence was, professional class 7 per cent., business class 23 per cent., mechanical class 17 per cent., working class (made up of barbers, butchers, cigar-makers, chauffeurs, etc.) 6 per cent., servants and domestics 6 per cent.; labouring class 24 per cent., women and children living at home 17 per cent. The ascertained birth-places of these people was Canada 59 per cent., England 19 per cent., Ireland 7 per cent., Continental 7 per cent., Scotland 4 per cent., United States 4 per cent.

Dr. Mann gave the results of tests at St. Michael's Hospital during the last three months. Of the 286 public ward cases, 158 men and 180 women, 57.5 per cent. of the men gave a positive reaction, 37.25 per cent. a negative, reaction and 5.1 per cent. doubtful; 64.5 per cent. of the women gave a positive reaction and 21.6 per cent. a negative.

In Dr. H. B. Anderson's service, all cases taken by routine, in three months the reaction was: of 76 men admitted 43.7 per cent. gave a positive reaction, 38.7 per cent. a negative, and 3.9 per cent. doubtful. Of the women admitted there was still larger percentage; 73 per cent. positive, 21 per cent. negative, and 5.4 per cent. doubtful.

In Dr. F. A. Cleland's service in the women's wards, 65 per cent. were positive, 31 per cent. negative, and 3.4 per cent. doubtful; and in the maternity department under Dr. Crawford, 50 per cent. were positive and 50 per cent. were negative.

Drs. G. S. Strathy and F. Arnold Clarkson continued the discussion on "Segregation and Notification." Dr. Clarkson's paper dealt with the preventive side. He took up particularly the question of segregation and notification. The following is a report of his address: "The preceding speakers have shown clearly and precisely how prevalent syphilis is in this community. Desiring

to deal with the preventive side of the question, the chairman has asked me to discuss briefly two of the most important measures which have been proposed—segregation and notification. No discussion of venereal disease can take place without considering the prostitute. The profession of prostitution is an evil which has existed at all times and in all countries, and appears to be innate in the social structures of all mankind. It will perhaps never be eradicated, still all the more we must strive to limit its extent and dangers. With prostitution itself it is as with vice, crime, and disease, the teacher of morals endeavours to prevent the vices, the law-giver to prevent the crime, and the physician to prevent the disease.

By segregation I include all those conditions where prostitutes are forced to live in certain districts, and are under more or less police control and medical supervision. This is one of the oldest methods that civilized nations have adopted in one form or another. In order to make the system effective under modern conditions, the physician is the most important factor. When he fails to do his duty honestly and fairly, the whole method becomes worse than useless. In Europe segregation has been operative for more than a century. In Berlin, for instance, by the Code of 1793, prostitution was licensed and remained under strict police control, with medical examination until 1845. For the five years following police restriction was withdrawn, with the result that by 1847 prostitution formerly confined to certain districts had spread over the whole town, and syphilis had increased to such proportions that the Emperor restored the system of toleration in 1851. Wherever segregation has been introduced into cities or cantonments, where the majority of the population is under military discipline, the results have been uniformly good. In the Indian army, for example, when the Contagious Diseases Act was in force, the percentage of syphilis compared very favourably with other armies, but as a result of prudery this enactment was repealed, and syphilis increased so much that about ninety per cent. of all men serving in India for seven years or more had become infected. In 1902, however, segregation was again established in the army towns of India, and the incidence of venereal disease is now almost as low as that of any other army; lower, I believe, than in the army divisions remaining at home.

In Norfolk, Virginia, with three thousand sailors in barracks, medical inspection of prostitutes was begun. The immediate result was that the admissions to hospitals for venereal infection were

reduced from 250 to 15, and incidentally the prostitutes decreased in number from 700 to 400. The medical officers in charge speak of it as an unqualified success, but when we come to consider the question as it touches the average city on the American continent, the matter assumes another complexion. In every place where it has been tried, it has proved a complete failure. In the first place, segregation fails to segregate. Secondly, segregation always means graft. And, thirdly, the certificate of health, which is a necessary part of this method, gives a sense of false security, and perhaps stimulates immorality.

Notification is one of the most recent methods that have been suggested to prevent the spread of venereal disease. So far, it has been applied only to syphilis. The physician can send his information to the medical health officer either by number or he can give the name and address in full. In the first case, the object can only be to determine the prevalence of the disease, but because venereal patients are "prone to wander" from one physician to another, the statistics will, at best, be faulty and give only an approximate estimate of those afflicted. To report the name and address of a patient suffering from syphilis outrages that sacred relationship for which medical men have been noted since the time of Hippocrates; and, even if we do report the case, what will the health officer do? To be consistent we must establish hospitals for the disease, as they have done for scarlet fever and diphtheria and keep a strict quarantine for months, and in some cases, years. The direct effect of such measures would be that the patient would avoid reputable physicians who would obey the law, and he would seek the advice of quacks, so that the end obtained would be exactly the opposite of what is desired. Again, if we notify for syphilis, which afflicts from 5 to 15 per cent. of the population, why not for gonorrhœa which touches the lives of from 25 to 80 per cent. of our young men? This method has not been tried very fully yet, so that there are few statistics to quote. New York has adopted it in a modified way, but I think there is little to be hoped from notification in any form.

Dr. Elliott: Referring to Dr. Mann's statistics, Dr. J. H. Elliott said that these reports from a down town hospital could not be taken as an indication of the general prevalence of the disease. This indication is merely that of the prevalence of syphilis among those patients whose hospital maintenance is paid for by the municipality of Toronto. Dr. Graham, for the General Hospital, has given an insight into the occupation of the patients admitted

for syphilis, and when one thinks of the many cigar-makers infected with syphilis, one realizes the possibility of direct infection from these cases, and from coming in contact with the products of their work. He spoke of the difficulty of getting notification of venereal disease, because of the fact that it would be almost impossible to get the case reported. Though the law requiring the notification of tuberculosis cases has been enforced for twenty years in this province, only 50 per cent. of the cases are reported.

Dr. Hastings: Dr. Chas. Hastings said that statistics show 10 per cent. of the inhabitants of the civilized world to be infected with syphilis, and 18 per cent. of the population of the United States. The commission appointed two years ago by the Local Government Board in England to investigate and report on this question, came to the conclusion that 12 per cent. of the people in Germany were infected with syphilis, 15 per cent. of the people in France, and 12 per cent. of those resident in London. Their report refers, however, more to the large centres, as Berlin, Paris, and London. The New York Department of Health recently applied the Wassermann test to all cases admitted to the public wards of the City Hospital, and in 12 per cent. of the patients entering that hospital, the reaction was positive. One would expect that in a city like New York, the percentage of venereal disease cases would be higher than in Toronto, though the reports to-day seem to show that there is a higher incidence in the latter city.

Syphilis is a cause of a large percentage of the cases of insanity, and a well-known cause in the production of the feeble-minded. The burden of the support of this growing class is not a light one. This fact is brought home when the cost, in civilized countries, of looking after and housing the great insane and feeble-minded population is known. Take for example, the United States. There, ninety-four million dollars a year is spent on the insane, and ninety million dollars a year on the feeble-minded. Syphilis and alcohol are responsible for a majority of the criminals, and this class is dealt with by the United States at a cost of six million dollars a year.

Ninety per cent. of blindness is due to venereal disease. Eighty per cent. of the gynæcological operations performed on women have been necessitated as a result of infection by gonorrhœa. Since all other efforts up to the present time have failed to prevent the occurrence of this wide-spread plague, this enormous volume of disease, surely there is now no justification for longer delay on the part of the municipalities in organizing for its control.

The figure 2,000,000, representing the number of syphilitics in the United States alone, was made public by Professor Irving Fisher of Yale University. This report of the number of cases in America was supplied to Professor Fisher by the late Dr. A. Morrow, and was revised and corrected by Dr. Fisher himself. This disease, so serious and dangerous in itself, surpasses most diseases in predisposing to other illnesses, and is responsible for much of the nervous disease that occurs in human beings.

Extermination of the social disease would mean an elimination of one-half of the institutions for the defectives. Neisser states that 75 per cent. of the adult male population contract gonorrhœa and 15 per cent. contract syphilis. What this weight of disease represents in the lowered working efficiency of the population, to say nothing of the increased death rate of the people, one could hardly estimate. These few facts, if known by all our people, would surely convince many of the grave danger to the nation arising from this insidious and continuous dissemination of venereal disease, and the most striking fact of all is that venereal diseases are preventable.

At a meeting of the Royal Commission on Venereal Disease, London, evidence was given by Dr. Mott, pathologist to the London County Council Asylum. He gave reasons for his conclusion that syphilis is the essential cause of general paralysis of the insane, and that without syphilis there would be no general paralysis. A comparison of figures for the last fifteen years in London showed that cases of general paralysis instead of diminishing were increasing, and at the present time $15\frac{1}{2}$ per cent. of admissions were for this condition. The male cases compared to female were as five to one. The incidence among males was higher in the West End, and in females in the East End. It was believed also that if the causes of infant mortality could be satisfactorily ascertained, this mortality would be an important indication of the prevalence of syphilis in that country. In children, blindness, deafness, enlarged glands and general debility are closely associated with congenital syphilis. Two per cent. of the cases of general paralysis of the insane are juvenile cases due to congenital syphilis. This percentage would be very much higher but for the fact that the majority of children whose brains become infected by syphilis die in early life or are born dead. Dr. Hastings laid great stress on the desirability of doing the Wassermann test on newly-born infants whenever syphilis was suspected. "Detect the organism at the earliest possible moment and begin treatment immediately." He advocated very strongly the establishment of public laboratories where bacteriological

examinations could be made, and it was very important that satisfactory education should be provided for medical students in order that syphilis may be better understood in its early stages, and so be detected and treated early.

The question is, how can we most effectually check the disease? If the reporting of these cases is insisted upon, this will have a great tendency to concealment. The above is the opinion of Dr. Mott in his report to the Royal Commission. The question was taken up by the American Public Health Association meeting held in Colorado Springs in 1913. The conclusion was, that if we hope to have these diseases reported, we must receive all reports in the strictest confidence. Medical men must divorce the question absolutely from the social aspect. It is not the physician's business how the disease is contracted. Dr. Clarkson pointed out the fact that segregation does not segregate. He also emphasized the truth that the physician's certificate that a prostitute is free from infection is practically a farce. He is correct in this, for it is easily understood that a woman might be examined now, and in a few hours have intercourse with a man and become infected, and after that infect someone else. It has been suggested that a special hospital for syphilis be established in each municipality. This would not do, as a stigma would be attached to the entering of that hospital. These cases would have to be treated in the general hospital and in a general clinic. The possibility now of a positive diagnosis and full assurance of good treatment will aid to some extent in controlling the disease, but the great and useful work of prevention is going to be almost entirely a matter of education.

Dr. Goldie: Dr. William Goldie was glad to hear that it was the general opinion among medical men that this question should be divorced entirely from the social side. Dr. Strathy's question, "Where does each patient with syphilis contract the disease?" is very much to the point, but he might have gone a little farther in speaking of that young girl lying in the hospital with syphilis. Where did she get it? This is the gist of the matter, and throws out altogether even the necessity of controlling the prostitute. The woman who has made this her business will take care that she does not infect her clientèle. She will advise the man how to take care of himself. Dr. Goldie was of the opinion that the question should be studied and dealt with exactly like the tuberculosis question. How can any one study it from any other side?

From his experience in connexion with hospital work, and from the reports he had heard of the conditions in other hospitals,

Dr. Goldie felt sure that the incidence of syphilis is extremely high, probably as high as that of tuberculosis. The disease is a long one, and Dr. Strathy's estimation of 10,000 cases in Toronto is no doubt very conservative. This estimate, he believed, was too low. The problem of handling the disease is a problem of education. In the U.S. Army means were provided the men that they might disinfect themselves, and the men were taught how to use these disinfectants. The result of this experiment in the army was that the incidence of venereal diseases fell very low. The demand for the packets became very great, and finally, for some reason or other, they were no longer served out. Again rapidly the incidence of the disease rose, but not to its former height.

There is a danger that the method of education that may be tried will be too rapid. If a diagnosis of the cases is made early, and in doubtful cases where the patient cannot pay for the Wassermann test, if laboratories are provided where the test may be done at the expense of the community, then a safe step will be taken; and these laboratories ought in some way to be connected with the board of health. These cases could not be wisely left in the hands of the staffs of the hospitals as a whole. It would be better to have a definite clinic established for the treatment of such cases just as exists at present for the treatment of tuberculosis. Some plan, such as outlined, for dealing with cases is necessary in order that the case may be kept under control, that it may be followed up and efficiently and thoroughly treated.

Dr. Fotheringham: Dr. J. T. Fotheringham spoke on the question of education, and said that special knowledge may be of value when imparted to certain isolated communities of individuals, but he would not care to see sex teaching in the schools. The method used among soldiers and sailors where the men are compelled to listen to instruction that will prevent them from the ill results of an act they are going to commit as often as they wish, cannot be applied to civil communities. Certain regulations may be applied in parts of the continent of Europe that could not be satisfactorily applied in Canada, the United States or Great Britain. Dr. Hastings' suggestion that such cases should be retained in the hospital till they are cured could hardly be carried out. I have found case after case of syphilis in men who have come in for treatment for other diseases altogether. Men come to the hospital suffering with vascular or nervous disease because unable to work, and we have found them suffering from syphilis as proved by the Wassermann reaction. It would be an unjustifiable burden to lay

on the public hospitals to require that such people should be given dose after dose of salvarsan at two dollars and twenty-five cents a dose. If the way of the transgressor is made easy he is going to transgress more.

Dr. Bates: Dr. Gordon Bates remarked that one thing had impressed him in the debate, and that was the fact that it had been limited so generally to the medical aspect of the question. It seemed to him there were many economic and sociologic facts about which the average doctor knew very little. One of the most important commissions that had ever been gathered together was the Chicago Vice Commission. This commission went thoroughly into the whole aspect of the question and brought in various recommendations, besides coming to definite conclusions as to the cause and prevalence of venereal diseases. It seemed to him that in dealing with the question, there were two distinct aspects of it. (1) The prevention of prostitution and (2) the prevention of venereal diseases themselves. He believed that the sociological aspect as well as the medical should be gone into by the physician. For example, what prevents early marriage, that very powerful factor in the prevention of venereal disease? What is the reason there is so much ignorance among the people, that ignorance which lies at the very root of prostitution? Why is it that there are practically no steps taken to prevent this ignorance? Dr. Fotheringham was antagonistic to the teaching of sex hygiene. Dr. Bates was not sure that he was opposed to it in all its aspects. He would surely agree to the teaching of sex hygiene to the adolescent youth and would admit the importance of this factor in the prevention of venereal disease. The question of teaching it to school children was quite another matter.

At the time Lord Kitchener was made commander-in-chief of the British army in India, the incidence of venereal disease was 270 per 1,000. In 1895 this incidence rose to 570, an incidence of illness so high as to interfere greatly with the efficiency of that army. A campaign was instituted by Lord Kitchener by lectures and instruction to the men and proper amusements were provided to a greater extent than formerly. The result was that in 1908 this high incidence had fallen to 69 per 1,000. This factor of prevention, successful in the army, was advocated also by the Chicago Vice Commission. They recommended the provision of wholesome amusement for the people in great cities.

Dr. McVicar: Dr. S. C. McVicar summed up the discussion as amounting to a demand for a public laboratory where Wassermann

diagnosis could be made. He made a plea for better teaching of syphilis in the university, where this branch of medicine was anything but thoroughly taught. He took issue with Dr. Fotheringham, who was against giving full treatment to syphilitic patients. Besides the necessity of controlling the infection, there is the necessity that these people shall not become public charities. With regard to the cost of the different forms of treatment under a mercury regime, there would probably be 1,000 days of hospital treatment necessary, whereas with mercury and salvarsan combined, there would be only ten days required.

It has been my experience during the last two years to have some teeth filled. The first dentist treated a syphilitic patient, shortly after he attended to me and I remembered that he had not sterilized his burrs. Changing to another dentist I found in his office, waiting for attention, one of my syphilitic patients. I saw both of these dentists, and talked to them about it, and found that they had no idea of syphilis being present.

Dr. Webster: Dr. Webster, a dentist present at the meeting, said that some physicians knowingly sent patients suffering with syphilis to dentists and did not inform the dentist of the fact. He said that he had treated patients on several occasions that had been sent to him by physicians who were treating these patients at the same time for syphilis. Dr. Webster found the manifestations of syphilis in the mouth often not very clear, not nearly so clear as the manifestations of gonorrhœa. It is a misfortune when a dentist fails to sterilize his instruments. Though there are some dentists who do not attend to this matter as thoroughly as they should, every dentist before being allowed to practice receives full instruction on the subject of office sterilization of instruments. He suggested that a physician who knew that a patient was going to a dentist, and that the patient had syphilis should in some way give a hint to the dentist that he might be on his guard.

Dr. Hunter: Dr. John Hunter said there was a great need of leadership in the medical profession on the venereal disease question. He hoped that the result of this meeting would be that an impetus would be given to some of the young men and that they would take up the question and make it their life work.

Dr. Wilson: Dr. N. K. Wilson referred to the use of the preventive packets which had been used in the United States army and navy, and which were now no longer served out to the men. He advocated that the use of this method should be known and taught to all students as soon as they enter college, and that such know-

ledge also should be spread to the labour unions, that this efficient method of prevention of venereal disease might be more generally used.

Dr. Bray: Dr. John L. Bray believed that a general knowledge of the evil of syphilis was the best preventive possible. If the medical profession would act on this principle as a starting point, there would be good results.

Dr. Howland: Dr. Goldwin Howland reported the final decision come to at the International Congress in London, 1913, as to the best means of preventing the dissemination of syphilis. The decisions of the members there was, that medical men should be well trained and educated in an understanding of syphilis, that they might be able to recognize the symptoms of the disease. It was believed that syphilis will always be present, and the best way to minimize its evil effects and consequences was by good treatment. The General Hospital was recommended as the suitable place for treatment. The opinion was that a patient suffering from this disease should be brought under control, and that the salvarsan followed up by the administration of mercury was good treatment.

Dr. Smith: Dr. Harley Smith said that when the council of the Academy took up this matter they thought that they as an academy, should make some sort of public pronouncement. This was their duty simply from the standpoint of a medical relation to the question, and probably that should be the limit of the pronouncement. "If we as medical men have failed in our duty, it has been the lack of public interest in a matter concerning the welfare of the general public. This lack of interest has applied to the tuberculosis question until recent years. It has applied to other great public questions. It seems to me that growing out of this splendid discussion to-night, there should be some action taken by this representative body by way of appointing a committee or of instructing the present committee to continue, or in some other way to empower us to lead public opinion in this matter."

Dr. Smith expressed his appreciation of the remarks made by Dr. Bates. He referred to the *Tribune's* attack on the quack men of Chicago. That campaign was most successful. The quacks almost to a man were driven out of the city. It was the duty of medical men to warn young men, when opportunity arose, against quack literature, issued by quack physicians and by institutions that make a specialty of treating venereal diseases. Dr. Smith's experience had led him to believe that knowledge had much to do with preventing men from falling into these errors and faults.

Dr. Young: Dr. Young, of Winnipeg, said that they had in Winnipeg a few years ago a commission that went into the question there, but that commission did not come to any conclusion whatever. The quarter so much spoken of in Winnipeg at that time is far different now, and is said to be well cleaned up. In Manitoba there is a notification law for syphilis and gonorrhœa, yet these diseases, as a rule, are not reported. Judging from the way in which men suffering from venereal diseases associate with each other and talk about their trouble, even in the waiting rooms of the specialists, there is reason to think that objection to notification would not be a very great hardship.

Dr. Graham: Dr. Graham said the most important point in regard to this question is that there should be uniformity of method in fighting this disease. The greatest weakness now is the weakness in the treatment of the disease. There are very few men that do not go with their primary sore or sore throat to some physician. Many, however, are not treated persistently until cured. If most of the effort was applied towards uniformity of treatment rather than to diagnosis, the results would be better. If syphilis is treated early, it is not going to be such an expensive thing. If one will count up the cost of mercury and the cost of potassium iodide, one will find these medicines costing many times over the amount required for salvarsan.

Dr. Mann: Dr. Mann said that the thirty-seven female patients at St. Michael's Hospital that by routine gave a 73 per cent. positive reaction, should not be taken as indicating the incidence of the disease. Of these thirty-seven there were five that would not admit exposure, and this autumn there has been in the hospitals a large number of young girls of questionable occupation. They are there with some sort of joint trouble or other disease, and this high percentage was discovered incidently. As for the twenty-nine women of Dr. Cleland's service, showing 65 per cent. of infection, considering their class, one does not wonder at this very high showing. These maternity cases were made up of girls confined of illegitimate children. He had read recently that out of 500 cases attending an eye clinic in Montreal, 13.3 per cent. gave a positive Wassermann reaction.

Dr. Clarkson: Dr. Clarkson in closing the discussion, referred to the campaign of education by the newspaper.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The sixth regular meeting of the society was held Friday, December 19th, 1913, Dr. D. F. Gurd, president, in the chair.

PATHOLOGICAL SPECIMENS: Series by Dr. E. J. Mullally.

1. Epithelioma of the lip; typical specimen showing lines of radiation.

2. Appendix removed from patient who had never had appendicitis; large concretion in lower third, upper two-thirds constricted.

3. Melanotic sarcoma involving sheath of vagus and sheath of carotid. The man had all his life at the outer angle of the right eye a pigmented mole. Five months before operation a swelling developed on the right side of the neck, grew rapidly and caused constitutional disturbances, loss of strength and weight.

4. Section of pancreas from a diabetic male, aged fifty-eight. Practically whole organ replaced by fat, only isolated portions of pancreatic tissue seen. Patient had extreme arteriosclerosis. Had diabetes for five or six years; under treatment improved considerably but lately, neglecting precautions, developed grave conditions the end result being a large carbuncle on the back of the neck; at autopsy pancreas was found as stated.

DEMONSTRATION of a useful and economical splinting material. Dr. Fraser B. Gurd exhibited material known as Beaver Board used instead of plaster for walls. He showed how splints for various parts of the body could be easily moulded from it. It is light, has considerable strength, is very cheap and gives absolutely no trouble when making x-ray plates.

CASE REPORTS: 1. Pyonephrosis with rupture into the intestines, by Dr. F. G. Finley and L. J. Rhea.

DISCUSSION: Dr. A. E. Garrow: I would like to ask whether the abscess referred to contained kidney tissue or whether it was a perinephritis abscess which had ruptured into the bowel. It seems to me a rather rare condition to find a perinephritis cavity communicating with the bowel and particularly with the small bowel.

Dr. L. J. Rhea: I think the condition here is an inflammatory one probably beginning in the kidney, with secondary involvement of the perinephritic tissue. There is no kidney substance that could be definitely recognised in the gross specimen.

2. Pyloric ulcer, by Dr. J. Alex. Hutchison.

Dr. Pirie exhibited slides of the stomach, showing the bismuth meal at different periods, also retention of the bismuth in a pocket caused by an ulcer.

PAPER: Gastro-enterostomy, experimental and clinical, by Dr. F. A. C. Scrimger.

DISCUSSION : Dr. E. W. Archibald: When one considers the subject of gastro-enterostomy in its broad lines one must be struck with the fact that results are not always what we expect them to be, in fact that they are more or less frequently unsatisfactory. Statistics seem to vary a great deal. Dr. Scrimger's results are based on the end results of operations done by several different men, and are to be accepted in that sense as valuable. On the other hand, one finds Moynihan claiming a very large percentage of favourable results; Paterson also, of London, while others acknowledge poor results. In Germany, Anschütz (verbal communication) has found his results on the whole rather unsatisfactory; he had had many brilliant results but also many disappointments. The internists are voicing loud complaints, and this was clearly brought out at the London meeting of the Canadian Medical Association last June.

Eleven of Dr. Scrimger's forty odd cases came back to hospital for persisting trouble following gastro-enterostomy. To these we have to add those patients who, though feeling themselves improved, are still suffering; and further, the patients from whom, though still suffering, we never hear. So that, on the whole, there are quite a large proportion of cases in whom gastro-enterostomy does not accomplish the ideal. What is the reason? The work that Dr. Scrimger has carried out indicates at least one probable cause of failure, and that is that the stoma is frequently placed in the cardiac portion where the expelling power of the stomach is poor. If it is poor, and if in addition the stoma is placed a little bit high on the wall of the stomach, say midway between the two curvatures, we have present a condition favourable to stagnation, a condition which somewhat resembles that of the vesical *cul de sac* behind an enlarged prostate, where urine stagnates. The cardiac portion of the stomach presses out the bulk of the material ingested, but there is left in the stomach a certain proportion below the level of the stoma which, sometimes at least, it has not power to expel, and it is my belief that that stagnant portion ultimately is rejected by vomiting. As to the cause of the pain which persists, I feel that we are still very much in the dark. It is sometimes due to the unhealed ulcer; in fact it is hard to explain it otherwise in many cases. From observations in the post-mortem room, I have found that the jejunum frequently comes out from underneath the mesenteric artery at a point a little bit to the left of the point at which, from

our experience with *x*-ray plates, we believe the peristaltic portion of the stomach to begin. In other words, if you are going to do a no-loop operation and be sure of placing the stoma in the peristaltic portion of the stomach, you run the risk of turning this first portion back to the right in a kink. Ordinarily the stoma is put into the nearest portion of the stomach, opposite the first three inches of the jejunum and the result is, I feel sure, that very often the stoma is not placed far enough to the right.

It seems to me we need some means by which we could stimulate peristalsis during operation in order to show us just at what point the peristaltic portion begins. If we had that, we could be perfectly certain that we were putting the stoma in the peristaltic portion. We have to discover something which will show us peristalsis on the operating table. When we get that, we could do a series of cases with the stoma definitely in the pyloric portion, others definitely in the cardiac, a stoma with the pylorus closed, others with it left open; and by comparing the results ultimately evolve a successful plan of operation.

From the clinical standpoint, it must be admitted that although the cardiac portion is definitely poor in expelling power, we still find that after a resection of the pyloric portion and the placing of the gastro-enterostomy in the cardiac portion, patients do well and food is properly expelled. The reason very possibly is that the closing of the stomach at the point of resection, leaving only the cardiac portion, cuts out the peristaltic portion altogether; and in that I see a hint pointing towards the possible advantage of putting the fascial ligature, not at the pylorus, but midway in the stomach, cutting off the whole peristaltic portion. Dr. Scrimger, in recent work in the laboratory, has found that the animals do better after this operation than when the fascial ligature is placed at the pylorus, the stoma being in the cardiac portion. If we do that, we may get the cardiac portion to empty itself, provided always we put the stoma low in the stomach. The ingesta are frequently heavier than water, and consequently they will sink partly by their own weight through the stoma if it is placed at the deepest point in the stomach. In this sense, I am of the opinion that gastro-enterostomy is still, in spite of the general outcry to the contrary, to some extent a gravity or drainage operation.

Dr. A. E. Garrow: I would like to ask if from the after-results Dr. Scrimger was able to determine where the opening had been in the great majority of cases, whether in the cardia rather than the antrum, the so-called peristaltic area.

Dr. F. A. C. Scrimger: In answer to Dr. Garrow's question: Dr. Archibald has already referred to the post-mortem findings that when a no-loop operation is done, the point at which the bowel can be brought up to the stomach is slightly to the left of the mid-line, some distance from the pylorus. This corresponds to that point at which the peristaltic waves are shallow or just beginning to be deep. This is found to correspond closely to the point outlined by Dr. Pirie as that at which the opening is regularly found to have been placed at operation, as shown by the *x*-ray. I would like to correct a slight error in one reference Dr. Archibald has made, of the twelve cases of failure six only were traced through returning to the hospital for treatment, the other six were traced through letters. In respect to the two openings, I cannot be entirely in accord with the statement that the food will pass by the pylorus. In our experimental cases, when a good sized opening was made in the pyloric end, most of the food passed out by the stoma whether the pylorus was open or not. This has been clearly seen in some of the clinical cases also. With regard to the failures, it is undoubtedly true, of course, that if there is mechanical interference, kinks, bands, etc., no operation can be satisfactory. But eliminating these, also those cases where the indications have not been towards a gastro-enterostomy, there are a considerable number of cases, both experimental and clinical, where the mechanical performance of the operation has been entirely satisfactory, yet the clinical result has left much to be desired. In three of the seven cases pronounced mechanically efficient by the *x*-ray, the clinical result was not good; in one there was no improvement. The stomach emptied in three and a half hours, the pylorus was closed, but the patient suffered pain and vomited.

PERTH MEDICAL ASSOCIATION

THE quarterly meeting of the Perth County Medical Association was held January 14th. It was well attended. A paper on "Intestinal stasis, its cause and treatment," was given by Dr. F. N. G. Starr, of Toronto, and was followed by one on "The use of digitalis in practice," by Dr. E. D. Rudolph, also of Toronto. The election of officers resulted as follows: president, Dr. A. F. McKenzie, of Monkton; vice-president, Dr. C. F. Smith, of St. Mary's; secretary-treasurer, Dr. F. J. R. Forster, of Stratford.

The local representatives elected were Dr. G. R. Deacon for Stratford, Dr. A. D. Smith for Mitchell, Dr. J. R. Stanley for St. Mary's, and Dr. J. Moore for Listowel.

LAMBTON COUNTY MEDICAL ASSOCIATION

THE Lambton County Medical Association met in the General Hospital, Sarnia, on Wednesday, February 11th. The meeting was of a surgical and clinical nature. Dr. Wilkinson, assisted by Dr. McDonald and Dr. Logie, operated on five cases. The old tariff was revised and a new schedule of fees adopted. The officers for the present year are: president, Dr. Bradley, Sarnia; vice-president, Dr. Calder, Petrolea; secretary, Dr. Kidd, Wyoming. The next meeting will be held in Petrolea in May.

VALLEY MEDICAL SOCIETY

THE mid-winter meeting of the Valley Medical Society took place at Middleton, N.S., January 29th, under the presidency of Dr. W. B. Moore, of Kentville. Papers were read by the president, Dr. Balcom, of Aylesford, Dr. Miller, of Kentville, Dr. Reid, of Middleton, and Dr. McDonald, of Meteghan. A dinner was given in the evening, after which Dr. Stewart, of Halifax, Dr. Morse, of Lawrencetown, Dr. Weatherbe, and Dr. DeWitt addressed the society.

AN organization meeting of the Medical Association of the united counties of Glengarry, Stormont, Dundas, Prescott, and Russell was held February 2nd, in the Chateau Laurier, Ottawa. The officers elected were: President, Dr. R. Reddlick, of Winchester; vice-president, Dr. J. P. Boyle, of Casselman; secretary-treasurer, Dr. E. Crown, of Crysler; executive committee, Drs. Reddlick, Boyle, L'African, Ravany, and Crain. The next meeting of the association will be held about the middle of March.

Medical Societies

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President—Dr. A. Rousseau, Quebec

Secretaries—Dr. A. Vallée, Quebec.

Dr. E. P. Chagnon, Montréal

Will meet in Quebec in September, 1914.

ASSOCIATION MÉDICALE C. F. DE MANITOBA :

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Secretary—Dr. G. A. Dubuc, St-Boniface, Man.

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SOCIÉTÉ MÉDICALE DES COMTÉS DE BEAUCE ET DORCHESTER :

President—Dr. Fortier.

Secretary—Dr. L. M. Déchêne, Beauceville.

Regular meetings, March, June, September, and December.

SOCIÉTÉ MÉDICALE DE ST-JEAN (IBERVILLE).

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SOCIÉTÉ MÉDICALE DE SHEFFORD :

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Secretary—Dr. A. Lessard, Granby, Co. de Shefford, P.Q.

Regular meetings twice a year.

SOCIÉTÉ MÉDICALE DE TROIS-RIVIÈRES :

President—Dr. C. E. Darche, Trois-Rivières.

Secretary—Dr. C. Duval, Trois-Rivières.

SOCIÉTÉ MÉDICALE DE VALLEYFIELD :

President—Dr. M. E. Deguire, Coteau du Lac.

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SOCIÉTÉ MÉDICALE DU COMTÉ DE KAMOURASKA :

President—Dr. B. Vézina, St-Alexandre.

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Regular meetings, February, June, and October.

SOCIÉTÉ MÉDICALE DU COMTÉ DE MASKINONGÉ :

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SOCIÉTÉ MÉDICALE DU COMTÉ DE WOLFE :

President—Dr. Thibault.

Secretary—Dr. A. Pelletier, St-Camille.

Regular meetings, the first Tuesday of March, June, September, and December.

SOCIÉTÉ MÉDICALE DU DISTRICT D'OTTAWA :

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Secretary—Dr. J. E. D'Amours, Papineauville.

LA SOCIÉTÉ MÉDICALE DE QUÉBEC :

President—Dr. E. M. A. Savard.

Secretary—Dr. Edgar Couillard.

The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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Results of Formamint Wulfin^g in :

1217 Cases of Sore Throat, Stomatitis & Pharyngitis.

85 „ „ Scarlet Fever.

23 „ „ Diphtheria.

Writing in "The Year Book of Children's Diseases," published in Berlin, 1912, Dr. Frisch, of Würzburg, made an important contribution to the bactericidal value of Formamint Wulfin^g based on an experience of over five years.

"During that period," he writes, I have treated almost exclusively with Formamint Wulfin^g 1,217 cases of catarrhal, follicular and phlegmonous sore throat, ulcerative and aphthous stomatitis and pharyngitis, as well as 23 cases of faucial diphtheria and 85 cases of scarlet fever."

He sums up the results in the following manner:—

In Catarrhal Sore Throat.

Before adopting Formamint treatment the temperature was often 104° or higher.

After adopting Formamint such temperatures were never seen.

While phlegmonous tonsillitis occurred in from three to four per cent. of the cases before using Formamint, it was quite exceptional after the author adopted this method of treatment, and it was milder in the rare cases wherein it did occur. There was less pain on swallowing and in the ear; the abscess softened more quickly and burst, so that it rarely needed incising, and the duration of the disease was considerably shortened.

In Diphtheria.

Before he adopted Formamint in his practice he found two or three injections of 1,000 to 2,000 units of antitoxin necessary.

After adopting Formamint only one injection of 1,000 units was needed.

The necessity for tracheotomy arose in only one case after Formamint; but, before, several cases had to be operated on.

Finally, after using Formamint, the membrane and the difficulty in swallowing disappeared rapidly; the temperature fell promptly, fever being absent on the second or third day, and recovery was rapid.

In Scarlet Fever.

After adopting Formamint there was not a typical scarlet fever temperature in a single case. The temperature when the rash appeared fell from 104° to 101.5°—102° on the second day; to 99.5°—100.5° on the third day, and was normal on the fourth day.

Desquamation was normal and quickly over.

During the whole five years under exclusive Formamint treatment, there were only two cases of middle ear suppuration, three of albuminuria, and no other complications or sequelæ.

The Canadian Medical Association Journal

VOL. IV.

APRIL, 1914

No. 4

SUPRAPUBIC PROSTATECTOMY

BY ANGUS McLEAN, M.D.

Professor of Surgery, Detroit College of Medicine

THE question of treatment in an enlarged prostate, causing obstruction to the flow of urine, is now fairly well established. That the surgical removal of the gland is the procedure which should be preferred to the long and tedious catheter life with all the accompanying dangers of a cystitis, of an ascending inflammation, a pyelitis, a nephritis, and what not, no one will deny. The route of choice, whether suprapubic or perineal, is not so definitely settled. However, the pendulum seems to be swinging in favour of the former.

In all operative procedures the question of mortality is of prime importance. The advocates of the perineal route claim "lessened mortality" as a great argument in their favour. Is this really a fact? It is true that according to old statistics the mortality of the suprapubic operation is very high; but does this hold to-day? Mortality does not depend on the operation so much as upon the functional capacity of the kidneys and the condition of the heart and general circulation, and this is the same for either method. Since we have paid greater attention to the kidneys and circulation our mortality has been materially lessened. If there is a marked cystitis, much residual urine (say two to five ounces) and if with the phenol-sulphonephthalein test (*i.e.*, 6 mg. or grs. 1-10 injected intramuscularly, appearing in the urine slowly, and only excreted to the extent of fifty per cent. in two hours) a kidney insufficiency is demonstrated, we always institute preparatory treatment. This treatment consists of copious ingestion of water, the administration of 40 to 50 grains of urotropin daily, repeated

Read before the Surgical Section, Canadian Medical Association, London, Ontario, June 25th, 1913.

catheterization or, better still, a permanent catheter introduced into the bladder through the urethra. If this is impossible or too uncomfortable, under local anæsthesia, a suprapubic stab drain, either with a drainage tube or catheter inserted through a cannula, is used. With such preliminary treatment carried out for from one to three weeks the condition of the kidneys is greatly improved, and the mortality accordingly immensely reduced. The removal of the prostate gland can be then safely undertaken.

More easily controlled hæmorrhage, a greater possibility of preservation of the sexual function, better drainage and more rapid closure of the wound are points which the upholders of the perineal method claim for the approach of the gland by this route; while less likelihood of incontinence of urine, less danger of injuring the rectum, and greater ease in operating and consequently a more rapid operation, are points which the upholders of the suprapubic method claim for the approach of the gland by this route.

The advantages usually claimed for the perineal route are, we believe, over estimated. If we consider them separately we can readily show our reasons for this statement.

1. *Easier Control of Hæmorrhage.*—Troublesome hæmorrhage rarely occurs if enucleation is properly performed; that is, if the gland is entirely peeled from out its capsule and not the capsule and gland peeled from under the mucous membrane. When the gland is entirely removed from its capsule, hæmorrhage usually ceases spontaneously. The capsule is a musculo-fibrous membrane and will contract. If, however, a piece of gland tissue is left, it acts just like a piece of retained placenta acts, *i.e.*, interferes with the contraction of the capsule and thus keeps up the bleeding. Bleeding from this cause has often been the cause of great anxiety to the surgeon, and as a result various gauze packs have been devised. These will rarely be required if enucleation is done entirely within the capsule. Occasionally it happens that bleeding, in spite of proper technique, does occur. This is especially so in cases which occur in prostates that have been the seat of long continued inflammation. Here the gland is so adherent that the enucleation necessitates a considerable amount of trauma. For these cases we have provided a small opening at the tip of the cystotomy staff, through which a ligature can be passed and to the same a piece of gauze attached, which can be made to fill in or pack the cavity from which the gland has been removed, by simply pulling out the staff.

2. *Greater Possibilities of Preservation of the Sexual Function.*—This on account of the age of these patients is of minor importance,

yet we believe the integrity of the seminal ducts is more liable to be preserved by the suprapubic operation. Tandler and Zuckerkandl (*Folia Urologica*, March, 1911) and Lowsley (*Am. J. Anat.*, July 15th, 1912) have demonstrated that the posterior lobe, which very rarely enters into the hypertrophy, but which is rather in a state of pressure atrophy, is separated from the rest of the gland by a distinct capsule. It is with this lobe that the ejaculatory ducts are closely connected, and because this lobe is left undisturbed in the ordinary suprapubic operation for benign hypertrophy, one can readily understand why the sexual state remains unchanged after this operation. This cannot be said of the perineal operation, for here the operator divides this lobe in order to gain access to the hypertrophied part of the gland above, and in so doing is in great danger of also dividing the ejaculatory ducts and consequently of destroying sexual power.

3. *Better Drainage.*—This argument sounds well, but on closer consideration it can easily be seen that it is not so forcible. Drainage of the bladder is not accomplished by gravity as would be the case, for instance, in draining a non-collapsible cavity. Bladder drainage is principally brought about by the contraction of the bladder itself, and by the intra-abdominal pressure increasing and diminishing in a wave-like motion with each inspiration. The great mistake in cases where drainage through the suprapubic wound is faulty, is the use of a small calibre tube, and inserting the tube too deeply in the bladder. Formerly we had a little difficulty in this respect, but since using a very large calibre tube ($\frac{3}{4}$ -inch in diameter), and since inserting it only an inch beneath the anterior bladder wall, we have had practically no difficulty in draining the bladder suprapubically.

4. *More Rapid Closure of the Wound.*—This is probably the one great argument in favour of the perineal operation. It is true that perineal wounds do very often close more rapidly, but what about the incontinence of urine that so frequently accompanies this operation? Of this we will speak later.

Besides mortality the functional result that follows any operation should ever be prominent in the mind of the surgeon. In the treatment of these cases, the ability of the patient to empty his bladder and, more important still, his ability absolutely to control the flow of urine is the functional result we seek to obtain. Can this be obtained by either operation? In the suprapubic, yes; for in none of our suprapubic operations has there been any difficulty in controlling the stream; in the perineal operation this result can be obtained in a large percentage of cases, but it is quite

impossible to determine which case will have absolute control and which will have only partial control or complete incontinence.

Incontinence is caused by injury to the "cut off muscle" or its nerve supply. In the perineal operation this muscle, the compressor urethræ, and its nerve, the perineal branch of the internal pubic, are very apt to be cut or in some way injured. By this route it is almost impossible to avoid injuring these structures to a greater or lesser degree and as a result we get an incontinence of urine, which, depending upon the nature and extent of the injury, will be partial or complete, temporary or permanent. It is incontinence of urine which has caused so many patients to defer the operation until the damage to the bladder and kidneys, caused by the obstructing enlarged prostate is practically irreparable.

A recto-vesical fistula is a post-operative complication which in suprapubic operations is practically unheard of. In the perineal, however, from the anatomical position of the operative field, this complication is not so rare and has occurred in the hands of the most able surgeon. Besides eliminating incontinence and recto-vesical fistulæ, the suprapubic method affords another advantage which is all-important, especially when operating upon the aged, and prostatectomies are practically always performed on this class of patients, *i.e.*, greater ease in operating and consequently of operating more rapidly. We believe the suprapubic operation can be done in half the time it requires to do the perineal. The bladder can be opened in one or two minutes and the enucleation at once begun. The completed operation should not take longer than ten to fifteen minutes.

The technique we employ is as follows: Nitrous oxide and oxygen anæsthesia with a preliminary dose of morphine and atropine is the anæsthetic we prefer, because it affords sufficient relaxation and is not followed by nausea. It permits the patient to take liquids and other nourishment soon after being returned to his bed.

The bladder is cleansed and emptied. The cystotomy staff is then introduced and the end pushed well up against the anterior bladder wall. A short incision, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches in length, is made just above the pubic bone. Fascia and muscle are divided, when the cystotomy staff will be seen and felt pushing the anterior bladder wall up into the wound. The peritoneum is pushed back and well out of the field of operation. The guide sutures are now placed in the bladder wall on either side of the projecting point and the bladder is quickly opened between these, directly on the tip of the staff. The index and middle finger

of the bare right hand are now introduced into the bladder (the assistant drawing the staff out in front of them) while the index finger of the gloved left hand is lubricated and inserted into the rectum. While the finger is being inserted into the rectum, the fingers in the bladder are exploring it for stone. The finger in the rectum now raises the gland upward to facilitate enucleation. In beginning the enucleation experience with these cases is a great asset to the surgeon, for sometimes only one large projecting lobe causes the sole obstruction and the removal of it may be all that is required. It can be made to peel out just as one can peel out a subserous fibroid of the uterus. It has, as it were, a surgical capsule of its own. In the ordinary so-called general hypertrophy the method of Freyer, as modified by Squier, is used. With this method, the index finger in the bladder, instead of being forced through the capsule of the most prominent portion of the gland is inserted far into the urethræ. When the anterior portion of the enlarged gland is felt, the finger pushes through the urethral mucosa. By this time the internal sphincter, already dilated by the enlarged gland, is still more dilated and is not severed. The finger is not only pushed through the mucosa, but also—and this is very important—through the capsule. This procedure is performed first on one side, then on the other, and then posteriorly, when the enlarged lobes will be delivered into the bladder. The urethra will tear at its weakest point, which is just above the ejaculatory ducts. The posterior lobe is left intact, and at the same time the ejaculatory ducts are preserved. Irrigation thus far, except for the initial bladder washing, has not been used. If clots form quickly, these are sometimes washed away, but more often cleaned away with dry sponges. When the bladder is well cleansed, a large drainage tube ($\frac{3}{4}$ inch) is inserted to the extent of an inch or inch and a half. Inserting the tube too deeply will cause spasm of the bladder wall. The guide sutures are now tied across the incision in the bladder wall. Four or five further cat-gut stitches are used to close the bladder tightly around the tube. A gauze drain is placed in the space of Retzius. The muscle and fascia are drawn together in the usual way, and two or three silk-worm gut sutures complete the operation.

The after-treatment is comparatively simple. Here meddlesome interference and fussing do more harm than good. If the drainage tube is properly inserted and is of proper size, there will be free drainage, and irrigations and washings are absolutely contra-indicated. Copious injections of fluids per rectum for twenty-four hours, and by mouth as soon as the patient's stomach will bear it

(which, if nitrous oxide oxygen has been used, is usually in two or three hours) is the only flushing that is necessary. If with these measures the urine still remains highly acid, with a tendency to the formation of uric acid crystals around the wound, then the internal administration of a urinary alkali (potassium acetate, potassium citrate or liquor potassæ) is indicated. No amount of bladder irrigation can supplant the internal administration of alkalies, and no amount of bladder irrigation will prevent the accumulation of uric acid crystals. All that is necessary as far as local treatment is concerned is a change of dressings should the urine leak alongside of the drainage tube. The drainage tube is left *in situ* for from six to nine days. After the removal of the tube the urine will still escape from the suprapubic wound, and it will then be necessary to change the dressings every two hours. At the end of the second week the patient is encouraged to urinate. Before this time it is not well to force urine over the prostatic site which is covered only by granulations. Complete healing of the cavity from which the prostate was removed requires longer time, but at the end of the second week healing has sufficiently advanced to allow urine to pass over its surface. At the end of the third and fourth weeks, and at longer intervals after, it is well to pass a soft catheter or a sound—very gently—into the bladder, to insure a good opening of the vesical end of the urethra. Local treatment other than such is uncalled for and, we believe, really harmful.

It is generally conceded that old patients withstand the recumbent position poorly, and for this reason it is well to place them in the sitting position as soon after a prostatectomy as is consistent with their general condition, which will usually be on the second or third day.

In summing up we would say that for the ordinary prostatectomy the suprapubic operation is the method of choice. It has a low mortality, it will insure control of the flow of urine, and can claim all the advantages that the perineal method can claim except, perhaps, that it requires a little longer time for closure of the urinary fistula. Its success depends: first, upon the preliminary treatment with copious ingestion of fluids, urinary antiseptics, and in some cases bladder drainage either by catheter or a preliminary cystotomy; secondly, upon rapid execution of the operation itself with ample provision for free drainage, and, thirdly, upon non-meddlesome after-treatment, which simply means internal administration of a large amount of fluids, early sitting position, and the administration of alkalies, if indicated to control urinary acidity.

THE PRESENT POSITION OF VENESECTION

BY ROBERT D. RUDOLF, M.D. (EDIN.), F.R.C.P. (LOND.)

Professor of Therapeutics in the University of Toronto

THE practice of blood-letting is a very old one. Mention is made of it hundreds of years before Christ; for example, it is spoken of in Homer's "Odyssey"; and Hippocrates, who lived in the third century B.C., used it constantly and laid down certain rules for its employment in pain, inflammation and ardent fever. Galen is stated to have made use of it very frequently. Through all the subsequent centuries bleeding seems to have been employed regularly and in what might almost be called a rational way, but towards the end of the eighteenth and beginning of the nineteenth centuries its use became an abuse and reached its climax in the time of the French physician, Broussais, and his pupil, Bouillard, of whom it was said by their opponents that they shed more blood than did their great general, Napoleon.

Then the procedure quite suddenly dropped out of use and for the rest of the nineteenth century was scarcely employed at all, and many practitioners might go through a long life without having ever seen it done.

The history of blood-letting is a good example of extremes in fashion in medicine. History is full of such examples, and they do not reflect much credit on our art. Marshall Hall,¹ that original and energetic physician, who lived in the early part of last century, gets the credit of having caused venesection to go out of use, and yet, when one reads what he says about it, he must either be misquoted or else it is well shown to what an enormous extent venesection must have been employed up to his time. Certainly his advice as to the frequency with which the method should be employed would be considered as very excessive nowadays, and he would be ranked as an ardent advocate rather than as a condemner of the proceeding. He classified all people into three groups as regards their toleration of blood-letting, as follows: the tolerance was gauged by the amount of blood that could flow before the production of incipient syncope in the sitting posture.

I. AUGMENTED TOLERANCE:—

- (a) Congestion of the brain, tendency to apoplexy, apoplexy due to congestion, 40 oz.
- (b) Inflammations of serous membranes: arachnitis; pleuritis; peritonitis; inflammations of the synovial membranes and of the fibrous textures of the joints—30 to 40 oz.
- (c) Inflammations of the parenchyma of organs: of the substance of the brain; pneumonia; hepatitis; inflammation of the mamma—30 oz.
- (d) Inflammation of the skin and mucous membranes: erysipelas; bronchitis; dysentery—16 oz.

II. HEALTHY TOLERANCE:—

This depends upon the age, sex, strength, etc., and on the degree of thickness of the parietes of the heart, and is about 15 oz.

III. DIMINISHED TOLERANCE:—

Fevers and eruptive fevers, 12 to 14 oz.; delirium tremens and puerperal delirium, 10 to 12 oz.; laceration and concussion of the brain and accidents before the establishment of inflammation, 8 to 10 oz.; intestinal irritation, dyspepsia, 8 oz.; cholera, 6 oz.

Marshall Hall² wrote as follows: "General blood-letting is of all our remedies the most powerful; its employment requires the utmost consideration. If we neglect the remedy in cases in which its use is required, we allow the disease to make a dangerous progress." And again: "In cases of inflammation, no one would think of trusting the safety of the patient to any other remedy than blood-letting"—all this from the man who condemned blood-letting as it was indiscriminately practised in his time! Soon after this, as already said, the remedy went out of fashion. No doubt during the last few thousand years there have been many such fluctuations in the value accredited to the procedure, and after such a chequered career venesection seems to be once more coming into favour—so far in a restricted way. We can only hope that a method which appears to be of such great value in certain cases may not be overdone; in fact, that the pendulum may not once more swing too far beyond the sane line.

PHYSIOLOGICAL EFFECTS OF BLOOD-LETTING.—It has been estimated by Haldane and Lorraine Smith³ that the blood in a healthy man constitutes about one-twentieth of the total body weight. In anæmic and some other abnormal conditions, strange to say, it may comprise as much as one tenth. Thus diseased people have relatively more blood than have healthy ones, although this, of course, is of poorer quality.

When a moderate quantity of blood is experimentally withdrawn from an animal, the total bulk of blood remaining is restored within a few hours. The corpuscles reach their normal count within a few days after a preliminary marked leucocytosis. The hæmoglobin is more slowly replaced. Here is a case recently recorded by Dr. J. Earle Ash,⁴ which well illustrates these facts, which have been shown experimentally. A young woman was admitted to the hospital suffering from a ruptured ectopic gestation, with very severe hæmorrhage into the peritoneal cavity. Twenty-four hours after the rupture had occurred the leucocytes numbered 40,000, and eighteen hours later the hæmoglobin was twenty-five per cent. and the red blood cells only 825,000. Within a few days the leucocyte count was normal, in about three weeks the red cells had reached their ordinary number, while the hæmoglobin was only completely restored at the end of two months. Besides these changes, there has been noted after a profuse hæmorrhage a lessened viscosity of the blood, and even after a moderate bleeding the coagulation time is lessened so that the blood tends to coagulate quickly at the bleeding point—which is, of course, one of nature's ways of stopping the bleeding. In some work on the coagulation-time of the blood⁵ we found that it was more surely hastened by hæmorrhage than by any other means.

The amount of blood that can be removed from an animal without causing death is commonly said to be one half of the total quantity, but in certain diseased conditions it seems that far more than this may be lost without a fatal issue. Thus Hayem⁶ has stated that as much as one eighteenth of a patient's body weight may be lost and yet recovery is possible. Enormous quantities were removed therapeutically in repeated bleedings a hundred years ago: thus, for a pleurisy over 5,000 grammes—about 150 ounces—were commonly taken away in a few days. In a case of acute rheumatism⁷ as much as twenty pounds—about 320 ounces—were removed within a few days and the patient, strange to say, recovered.

It has been said that when the erythrocytes are below one

million as the result of an acute hæmorrhage recovery is impossible, but the case given above shows that this rule does not always hold, as there they numbered only 825,000, and yet the patient was quite recovered in two months.

Therapeutically, bleeding may be of value in several ways:

1. When the right side of the heart and the veins flowing into it are distended with blood from any cause, and the patient is cyanosed and dyspnoic, the removal of some blood from the veins may be life-saving, and this in a purely mechanical way. This is the simplest manner in which venesection acts and probably most practitioners nowadays have seen the striking results so obtained.

CASE 1. A. B., age seventy, was admitted to the Toronto General Hospital in a semiconscious state. He was cyanosed and the extremities were blue cold. He appeared to be dying. Had been ill for several days and was found lying alone in this state, and brought to the hospital. He was at once bled from the arm. At first the blood would scarcely flow, but we eventually took fifteen ounces from him. Within an hour he was much better and examination showed that he was suffering from lobar pneumonia, although he had little fever. Eventually he did well and left the hospital cured. Here failure of the right heart seemed to be the immediate cause of the desperate condition, and, as far as one could judge, he would have died within an hour or two if he had not been thus relieved.

It would seem to be most wise in these cases to open a vein near to the heart, such as the jugular. Some have even advocated the direct relief of the right heart by puncture in very desperate cases. Dr. J. Wallace Milne,⁸ of Aberdeen, recorded such a case three years ago. His patient, a young woman of twenty, was cyanosed and unconscious. Blood would not flow from either median basilic vein nor from the incised brachial artery. So then he passed a trochar and cannula of the size of a No. 3 catheter directly into the right heart through the fifth left intercostal space and drew off twenty ounces of blood. The patient recovered consciousness, but died several hours later. Such an operation would probably be justifiable in a few desperate cases and *might* save life.

In less acute conditions of failure of the right heart with cyanosis a preliminary bleeding will often cause digitalis to act better than if this drug is given without such a preceding step.

2. As mentioned above, bleeding brings about a quicker

clotting of the blood than does almost any other agent with which we are acquainted. Hence, theoretically it would seem to be sound practice to bleed when a hæmorrhage is occurring in some deep part, where the presence of the extravasated blood may do harm; for example, in cerebral hæmorrhage. The old practitioners used to bleed for gun-shot wounds of the chest in order to stop the deep bleeding. Such a case is mentioned in Blackmore's "Lorna Doone."

Because of the fact that bleeding hastens coagulation it would be bad practice to bleed in cerebral thrombosis or embolism, but it might be sound, and indeed is often recommended, to do it in aneurism, where we may thus aid nature's way of relieving the condition, which is by the production of clotting in the sac. We have done this several times in the last few months with marked symptomatic benefit to the patient.

3. By far the largest field for blood-letting appears to be for the relief of toxic conditions, bacterial and other forms. In acute conditions, such as acute uræmia, in gas poisoning, and in various toxæmias due to infections, such as typhoid fever and pneumonia; and in chronic conditions, such as chronic uræmia and arteriosclerosis, the removal of a moderate quantity of blood from a vein acts in a way which is certainly more marked than results from any other treatment at our command. How this effect is brought about is not very clear. Of course it is easy to think that the toxins are removed along with the blood, and Ch. Bouchard⁹ says here: "It is certain that we remove more extractives from the blood by bleeding than by any other channel, the renal excepted, for a bleeding of 32 cc. removes from it as much as does 280 cc. of liquid diarrhoea or 100 litres of perspiration." But when one considers that a moderate venesection of, say, fifteen ounces removes only perhaps one seventh of the blood of the body in health, and perhaps only one fourteenth of it in disease, it would seem that the toxins are only a fraction less strong than before, which should not make such a marked difference. But we know that after a bleeding the vessels quickly fill again, and this fluid must all come from the tissues and lymph channels, and thus there is a profound change in the position of much fluid in the tissues. It may be right to put the matter in this form at present: venesection may in toxic conditions bring about a marked amelioration in the state of the patient, but how this change for the better occurs is not very clear, although several theories may partially explain it.

The question of immunity is at present keenly interesting the profession, and it would seem that one way at least in which

bleeding relieves patients suffering from infections is by its stimulating the production of antibodies. Much evidence has been accumulated in the last twenty years to show that hæmorrhage tends to increase the natural immunity to infection by bringing about in some obscure way an increase in the antitoxins and antibodies. Roux and Vaillard,¹⁰ in 1893, showed this to be the case by experiments on animals, and recently the same experimental proof has been given in the case of man. Professor Dreyer and Dr. Schroeder, of Copenhagen, showed some four years ago that bleeding produced an increase in the agglutinins, both in man and animals suffering from typhoid fever, paratyphoid and in *bacillus coli* infections. Dr. Schroeder¹⁰ cautiously asks "if it is not possible that this augmented production of agglutinins, and presumably other antibodies as well, may not furnish in part at least the correct explanation of the beneficial effects that have been ascribed from time immemorial to the letting of blood in acute disorders?" Thus is a time-honoured empirical method brought into line with the latest theories.

Let me now give a few cases showing the beneficial effects of bleeding, either natural or produced therapeutically, in the course of acute toxæmias and infections and of chronic cases of similar origin.

CASE 2. A young woman was admitted to the Toronto General Hospital suffering from vomiting, headache and twitchings, almost amounting to convulsions. She had been confined a week before admission. The urine was loaded with albumin and the systolic blood pressure was 190. Free purging, hot packs and pilocarpin were used without benefit. She was then bled from the arm and fifteen ounces of blood were removed. The blood pressure fell to 175 mm. at once and within twelve hours was 130, and she left the hospital well in a few days.

Many cases similar to this are on record. Thus P. Zweifel¹¹ wrote last year, that he had used venesection in fifty-seven out of his seventy-one cases of post-partum eclampsia and almost invariably the fits ceased at once. All the patients so treated recovered. He is convinced that venesection never did any harm, while all concerned were impressed with the benefit from it; it proved life-saving in many cases.

Again, Potocki¹² reports twelve cases where he drew blood from a vein to ward off impending eclampsia, or in the treatment of the same. He was much impressed by the instant subsidence of the alarming symptoms after the venesection in two cases of

what he calls the stage of pre-eclampsia. The patients say that their headache and ocular disturbances stop at once. After convulsions 600 to 1,000 grammes should be removed. He always noted a profuse diuresis after the bleeding. This has also been noted by many observers and was specially called attention to by Professor Robin⁷ at the International Medical Congress in 1900.

The next few cases illustrate the effects of hæmorrhages, mostly spontaneous, in acute affections such as typhoid fever. Most of the typhoid fever cases form the subject of a paper that I communicated to the Association of American Physicians last May, and the charts appear in the transactions of that association as also in the *American Journal of the Medical Sciences*, (January, 1914). I have added two more to the list, and left out two or three which were the least impressive. The notes are just those made at the time, generally by the house-physicians.

CASE 3. (Vol. xxxix, Case 6,088). Male, aged thirty-five, admitted to the Toronto General Hospital, October, 1909. Duration of illness about two weeks. Was in fairly good condition; abdomen not distended; pulse very dicrotic. October 6th: "Chilly, with free sweats. Lips dry; tongue clean and very red." October 7th: "In early morning and again just before noon, patient complained of chills and sweating; was quite restless and had severe abdominal pain with no tenderness or rigidity. Some nausea. Bowel movement at noon showed some small dark clots. Half-an-hour later he passed a large quantity of blood, and an hour later a third hæmorrhage. Pulse became rapid and he had faint feelings; was blanched, hands cold and clammy, and after another hour had a profuse perspiration. At midnight pulse rate not hastened and temperature only 99." October 8th: "Slight hæmorrhage this morning. This recurred slightly on the two succeeding days." October 11th: "General condition satisfactory." November 13th: "Uninterrupted progress." Soon after left the hospital well.

CASE 4. (Vol. xlvii, Case 6,997). Female, aged twenty-eight, admitted September 18th, 1909. Been ill for about a month. Fairly severe attack. September 26th: "Very drowsy and slept most of day. Tongue dry. Some diarrhœa and abdomen distended." September 29th: "Abdomen markedly distended. Pulse dicrotic. Patient very dull." October 1st: "Hæmorrhage occurred in night, and to-day several times. Pallid, with cold clammy skin. Pulse poor quality. Respiration sighing." October 2nd: "No more hæmorrhages. Patient brighter." October 4th: "Abdomen

distended. Respiration sighing. Pallor marked, but pulse unchanged." October 5th: "Slight hæmorrhage to-day." This patient eventually left the hospital well. Probably on October 4th, when the temperature fell, there was a hæmorrhage into the bowel which did not appear as the bowels did not happen to move.

CASE 5. (Vol. xlvii, Case 6,926). Male, aged thirty, admitted September 30th, 1909. Been ill for about five days. Severe case with high fever, easily lowered always by five grains of aspirin. October 14th: "Restless night, trying to get out of bed and talking to himself. *Subsultus* marked. This morning sweating very freely. Very drowsy, but rational until night, when he has been sitting up and trying to get out of bed. 8 p.m. temperature 105°, pulse 120 and respirations 20. 10 p.m., temperature only 100·2°, pulse 104 and respiration 20." October 15th: "Profuse hæmorrhage at 6 a.m., blight bright red. Pulse thready and intermittent. Profuse sweating. At noon patient quite bright, pulse 112, respiration 24 and temperature 98·2°." Had another hæmorrhage that evening. October 16th: "Patient brighter. Pulse of better quality. Very quiet and sleeping most of the day. Abdomen satisfactory." After this the patient had several hæmorrhages at intervals of several days. Each one was followed by a temporary drop in the temperature and pulse rate, and an improvement in the general condition. He eventually completely recovered.

CASE 6. (Vol. lxxiv, Case 9,772.) Male, aged twenty-six, admitted October 9th, 1911. Been ill about ten days. Was dull and heavy, and covered with rose spots. Lips dry. Temperature, 104·8°. October 14th. "Very dull and heavy. Perspiring freely. Respiration, 36. Pulse, 105. Had a free hæmorrhage this morning." October 15th. "Patient appears to be improved; is less toxic. Tongue still dry." October 16th. "Pale, and hard to rouse. This morning had two hæmorrhages. Has twitchings of eyebrows and mouth. Tongue very dry." October 17th. "Brighter to-day, in every way." After this he steadily improved and left the hospital well on December 21st.

CASE 7. (Vol. lxxiv, Case 9,773). Female, aged fourteen, admitted September 13th, 1911. Duration of illness about twenty-six days. Very ill on admission. Tongue pale and moist and covered with white fur. Abdomen distended. Remained very ill and toxic during the next few days. September 30th. "Restless night. Temperature, 103·4°. Pulse, 124-134. No marked abdominal distension. At 11 p.m., had rather profuse hæmorrhage and this recurred on following day." October 2nd. "Abdomen

distended. Involuntary urination. Later became worse and more toxic, with filling of the bases of the lungs and died on October 4th."

CASE 8. (Vol. xxv, Case 4,210.) Female, aged thirty-two, admitted April 28th, 1908. Been ill for about ten days. Very ill on admission. May 1st. "Temperature high. Delirious and weak." May 7th. "Hæmorrhages early this morning; again at mid-day; blood very dark, and not in great quantity. Abdomen much distended." May 8th. "Another large hæmorrhage to-day. Pulse much as before." May 10th. "Pulse very weak. Restless and unconscious most of the time." May 19th. "Weaker and died at 5.15 a.m."

CASE 9. (Vol. lxiii, Case 8,870.) Male, aged twenty-one, admitted January 19th, 1911. Duration of illness about nine days. Fairly well on admission. Was evidently near the end of his attack. A week later had a relapse, and on February 4th, a hæmorrhage. On the day before was dull and sleepy. Systolic blood pressure, 110. Lips were crusted and tongue dry and beefy. Had another hæmorrhage on 5th, and again on the 7th and 9th. After that the patient steadily improved and left the hospital well on March 25th.

CASE 10. (Vol. xviii, Case 3,302.) Male, aged twenty-two, admitted September 23rd, 1907. Had been ill for about three weeks, and now feeling better. September 30th. "Nose bled to-day. Feeling better." October 1st. "Slight hæmorrhage from bowel. Pulse and temperature not affected by it." October 4th. "Another slight hæmorrhage." October 10th. "Nose bled again." "Is feeling well." November 2nd. "Discharged well."

CASE 11. (Vol. lxiii, Case 8,691.) Male, aged twenty-four, admitted September 19th, 1910. Been ill for four weeks. "Now very ill and drowsy. Pallid. Tongue dry and coated." October 11th. "Nervous and trembling. Very toxic. Involuntary evacuations. Looks almost moribund. Drowsy and stupid. Lungs show a consolidation at right base." October 13th. "Is still very low. Profuse hæmorrhage to-day." October 14th. "More clots in stools." October 15th. "Much better to-day. Lung condition clearing. Pulse rate 106-122. Had a good day, but did not rest so well last night." November 3rd. "Doing well. Temperature and pulse normal." Was discharged from the hospital on November 27th.

CASE 12. (Vol. lxxiv, Case 9,774.) Female, aged thirty-two, admitted August 28th, 1911. Been ill for eight days. Ran very

bad toxic course. Tongue dry and much delirium and headache. September 8th. "Bowels moving six times daily. Very toxic. Abdomen distended. Much nausea." September 10th. "Many crepitations at both bases." September 16th. "Passing urine involuntarily." Much twitching of muscles. September 20th. "Very ill. During night had a seizure lasting ten minutes during which she cried out and twitched violently, and frothed at the mouth. Urine shows much albumin and many granular and epithelial casts." September 22nd. "Patient given half ounce of castor oil. She is very ill with persistent delirium and many crepitations at both bases. Perspiring freely. Pulse very bad and scarcely perceptible." September 25th. "At midnight last night had a severe intestinal hæmorrhage. The bed was found to be soaked, and the blood gurgled from bowel. Abdomen now markedly scaphoid." September 26th. "Another hæmorrhage last night, but motion was chiefly faecal matter with some dark clots. Abdomen absolutely scaphoid. Patient is much better on whole than she was before the bleeding." September 28th. "Much brighter to-day. Pulse quite strong, but small. No blood in stools. Taking a moderate amount of nourishment." After this she steadily improved and left the hospital well, except for a neuritis in one leg, a few weeks later.

These are all examples of natural bleeding in typhoid fever, and all showed a drop in both the temperature and the pulse rate following the bleeding; they suggest that *if* we were to remove some blood artificially in severe cases, we might get the good effects without any of the evil ones which haunt the occurrence of spontaneous bleedings. This idea has been suggested by several men, notably by Dr. H. Whitehead,¹³ who had been struck with the increase that occurred in agglutinins in typhoid fever after hæmorrhages.

The following is an example of a good sequence to venesection.

CASE 13. (Not yet filed.) Female, aged thirty-four, admitted to the Toronto General Hospital, October 17th, 1912. Duration of illness about two weeks. "Very toxic and pays no attention to what is going on around her. Lips dry and cracked. Tongue dry and red. Spasmodic movements of chin. Hands are tremulous. Abdomen distended and tympanitic. Spleen and liver both are palpable." October 16th. "About the same. Seems dazed and at time picks at the bed-clothes. Temperature, 105°. Pulse, 110. This evening five ounces of blood were drawn off from the arm and ten ounces of normal saline injected." Various medicinal remedies were also used. October 19th. "Nine a.m. Temper-

ature, 99°. Pulse, 88. Is listless and weak. Mutters at times. Lips cracked and tongue still dry." After this continued very ill, but less desperately so, and by the end of the month was much better, and left the hospital well before the end of the year. Even the removal of so small an amount of blood in this case seemed to change the whole state of the patient.

The following case is one of lobar pneumonia in which a timely venesection appeared to save life.

CASE 14. (Vol. lxxxvii, Case 11,036.) Man, aged twenty-seven, carter, admitted to the Toronto General Hospital very ill with double pneumonia on December 12th, 1912. Was flushed, cyanosed and quite unconscious. Three days later Dr. Chambers and I both thought that he could not last many hours. He was flushed and cyanosed, unconscious and dyspnoëic. Tongue dry and like sand-paper. Systolic blood pressure 135. We bled him, removing seventeen ounces of blood from the median basilic vein. Pressure fell to 110 mm. By night he was much easier, fever less and was conscious, with a more natural colour. Next day the fever was high, but patient never became so ill again, and at last on the eighth or ninth day of the disease had his crisis, and eventually completely recovered. In this case death was threatening from toxæmia.

In chronic toxæmias a bleeding appears to be often of value. Probably all have occasionally seen the good effects of a nose bleeding.

The following case impressed me some years ago.

CASE 15. H. L., aged sixty-five, a hard working indigo planter in India. Suffered from pains in the chest and feelings of faintness, although the pulse was always too hard and strong. Irritable and sleepless. Various treatments were tried for the arteriosclerosis without much effect. One evening while driving he was seized with faintness and soon after vomited a large quantity of blood. Was weak after this for a time, but then picked up and the improvement in his general condition was very marked. A year later he began to be troubled with pains in the chest and upper part of the abdomen again. The pulse was strong and of high tension. I was suspicious of a dilated aorta. He went home to England and a year or two later had a stroke, and this recurred and proved fatal. In this case the hæmorrhage made a new man of the patient for fully a year, and on looking back on the case I feel confident that a timely venesection, repeated perhaps twice yearly, might have kept him in comparative health for some years.

The following case shows this good result.

CASE 16. A. B., keen, hard working business man, aged sixty. He is rather plethoric and stout. Has always had headaches when working hard or worried. Has had various manifestations of gout. When the blood pressure was first measured six years ago it was 170 mm. Since then it has always been too high and has reached 220 mm. He went to England a few years ago and Sir Victor Horsley called his condition, "intellectual headache." He took a "rest cure" and came back feeling much better. He soon, however, was almost as bad as ever again. Saline purges, potassium iodide and restricted diet gave him some relief, but the pressure kept about 200, and a year or two ago he became so dizzy that he could scarcely walk about. The urine has always been free from albumin. Last autumn it was noted that "he had has a steady headache for weeks. Looks pale and the vessels stand out on forehead." The systolic blood pressure was 220 mm. I asked Dr. Primrose to bleed him, and he removed twenty ounces of blood from the left arm. He felt easier almost at once, and a month later the note ran, "Has been very well since, with no headaches. Is feeling a different man since the venesection. Systolic blood pressure 185." Since then he has remained well, although working as hard as usual. The blood pressure has not been above 185 during the year following the venesection.

It is remarkable, in these cases, how long the good effect of venesection remains. Thus this patient has not required it since. R. F. Fox,¹⁴ two years ago, in an article entitled, "Cases illustrating the use of Venesection," gives many examples illustrating this fact. For instance he speaks of a lady of gouty habit who had had precordial pain and heat and pain in the head with subconjunctival hæmorrhages and vertigo, which he diagnosed as one of "post-menopausal congestion, threatening apoplexy." He bled her to the extent of fifteen ounces, and four years after she wrote that the "bleeding had done her a great deal of good" and that the vertigo had not returned.

METHODS OF VENESECTION. The old practitioners used to bleed by cutting the skin and vein at one incision, but nowadays it seems safer to expose the vein by an incision right over it, and then incise it by a second cut. I find it is much easier to do this if the vein is picked up with a fine pair of forceps. No stitches are necessary. Recently I have been using a method which is neater and cleaner. It consists in puncturing the vein through the skin with a sharp needle of 2 mm. diameter. The blood flows freely through this

and if a piece of tubing, previously filled with water be attached to the needle and this be led into a vessel, then as much negative pressure may be used as desired and thus the chances of clotting in the needle are lessened.

CONCLUSIONS. In many cases venesection is the most powerful method of treatment at our command, and, if used with great discretion, seems to be free from any bad effects. It is often indicated in the following cases:—

- (a) Heart failure, acute or chronic, with marked cyanosis.
- (b) Acute toxæmias, such as acute uræmia.
- (c) Acute infections, such as typhoid fever and pneumonia.
- (d) Chronic toxæmias, especially those with high blood pressure.
- (e) It may be occasionally used in cases where we wish to increase the coagulability of the blood, as in deep hæmorrhages, and in aneurism.

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GASTRO-ENTEROSTOMY; EXPERIMENTAL AND CLINICAL

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A VAST amount of work, both experimental and clinical, has been done by many investigators in developing our knowledge of the motor activity of the stomach and the mechanical effect of a gastro-enterostomy on the passage of food. The operation has won for itself a very important place in gastric surgery, the mechanical manner of its performance has been pretty definitely fixed and very generally adopted. There are, however, undoubtedly certain problems concerning the conditions under which it is an efficient treatment which require further investigation. During the past year or two there has arisen a growing tendency to question the permanency of the relief following gastro-enterostomy and to restrict the type of case in which it is applicable.

Data on the late results of the cases treated by gastro-enterostomy at the Royal Victoria Hospital are being collected and will, it is hoped, be the subject of a later report. In the meantime sufficient evidence has been collected to indicate that in a considerable number of cases there has been a recurrence or continuation of symptoms after operation. Some of these are clearly due to the failure of an ulcer to heal, and some to a mechanical failure in the procedure. A preliminary report and the cases so far traced we give as follows:

Late reports from forty-two cases of benign lesion in which gastro-enterostomy had been performed are available. The time

Read before the Canadian Medical Association, June, 1913, and before the Montreal Medico-Chirurgical Society, December, 1913. For discussion see p. 272.

elapsed since operation varies from one to nine years. In twenty-nine of these, replies have been received in answer to specific questions in regard to pain, vomiting, ability to take food, or the recurrence of any symptoms of the former illness. In five, the information was received from the physician who sent the case in and who had had opportunities of seeing the patients since. In eight the information was received from the surgeon who operated and who had either seen the cases recently or had been in communication with the physician. In fifteen cases a fluoroscopic examination was made and the mechanical efficiency of the artificial stomach tested by the bismuth meal.

Of the forty-two cases here reported, seventeen were perfectly well, so far as freedom from pain, vomiting, epigastric distress, and the ability to take all kinds of food are indications; twelve are reported improved, but were not entirely free from stomach symptoms—some have attacks of vomiting, some have to choose food carefully, and some have had hæmorrhages; twelve cases are reported unimproved.

We quite realize that these figures may give an unnecessarily gloomy aspect of the success following this operation, if for no other reason than that the numbers are small—about 20 per cent. of the total number of cases operated on; and that six of the twelve cases not improved were traced through their returning to the hospital for further treatment. We have therefore made no attempt to marshal them into percentages, and will mention only a few points that appeal to us as of interest.

Of the seventeen cases reported well, in thirteen there was either an ulcer at the pylorus, a duodenal ulcer or a definite stenosis present. In four of the twelve cases classed as improved the disease was away from the pyloric ring and there was no obstruction to the outflow of food; in four the ulcer was near or at the pylorus, and in one a definite obstruction was present.

Of the twelve cases not improved, in six the lesion was in the region of the pylorus, two on the lesser curvature, two dilatations without stenosis, one duodenal and one negative.

Of the fifteen cases examined by the fluoroscope in one only did the food pass wholly by the pylorus; in three it seemed to pass fairly freely by both; in four the stoma functioned, but not well, the food passed mainly by the new opening but was delayed, or the emptying of the stomach was incomplete. In seven most of the food or all escaped by the artificial opening.

It is noteworthy that so long as food was present in the stomach

in any quantity it entered the pyloric end of the stomach beyond the artificial opening and was carried up to the pylorus with each succeeding peristaltic wave.

Of the seven cases which may be said to be mechanically satisfactory, as shown by the *x*-rays, two were among those reported well, four among those improved, and one not improved. This last is of great interest to us. The stoma was placed well within the contractile area and the pylorus was closed. The stomach emptied in three and one half hours, but during all this time strong peristaltic waves were carrying the food up to the closed pylorus. The patient was nauseated and suffered pain. It is possible he has a jejunal ulcer.

These considerations seemed to warrant a series of experiments which have been carried out with the object of testing existing theories concerning the evacuation of the stomach after gastroenterostomy, of studying the relation of the site of the stoma to its efficiency, as well as the mechanical factors involved in its success or failure to functionate.

The stomach of man and the animals used is divided, as has long been known, into two well defined parts: the body, comprising the larger sac-like portion towards the cardiac end, and the narrower, more muscular part towards the pylorus. Physiologically, also, these two main divisions are distinct in the type of the contractions found. The muscular activity of the body is characteristically that of a tonic contraction keeping up a steady though not great pressure on the contents; while that of the pyloric portion is a strong ring-like wave of contraction passing at more or less regular intervals towards the pylorus. The dividing line between these two is not anatomical and has been shown by Cannon to vary within narrow limits according to the degree of the distension of the stomach with food.

In man the area of peristalsis generally roughly corresponds to the transverse portions of the stomach as seen on the fluoroscopic screen with the patient in the upright position. The sharp differentiation between the area of tonic contraction and the area of peristalsis that is seen in dogs is, however, not so apparent in man. The area of peristalsis begins farther away from the pylorus, and shallow, hardly propulsive, waves are not infrequently seen well up on the fundus along the greater curvature, even taking origin almost in the cardiac end.

The experiments were made on dogs and cats. The routine followed consisted in the making of an anastomosis between some

chosen portion of the stomach and the first few inches of the jejunum by the recognized suture method. Markers consisting of metal buttons or lead discs were put in to indicate the ends of the opening the pylorus, or other area as desired. After the animal had recovered from the operation it was examined before the fluoroscope. The route taken by the food, the degree to which the stomach filled, the rapidity of its discharge, and the relation of the peristaltic wave to the stoma were, where possible, noted.

At a later period the animals were anæsthetised immediately after having been fed; the abdomen was opened and the discharge of food observed over periods varying from one to two and a half hours.

The experiments fall naturally into two main classes: those in which the anastomosis was made in the pyloric end within the area of peristaltic activity, and those made in the body of the stomach where there is no peristalsis, in the area of tonically contracted muscle. These are again divided into two groups: those in which the pylorus was left open, and those in which it was closed. As the result of certain observations on the animals already examined, a fifth group was made (at the suggestion of Dr. Scrimger) in which the anastomosis was placed either in the body of the stomach, or at least well away from the pylorus, while all that portion distal to the stoma was cut off by a fascial ligature.

Before referring to the experiments in detail there are certain observations, either common to all or incidental to the main object of the investigation, that it may be worth while to mention. In determining the point at which the anastomosis was to be made, it was necessary to find some means of readily determining the point at which the peristaltic wave began. It was found that hot saline dropped on to the stomach at a temperature of about 60°C. was a very efficient stimulus to the muscles, and promptly set up strong peristaltic contractions. It was also found that eserine salicylate given hypodermically, fifteen to twenty minutes before etherisation, was usually efficient in calling forth strong normal peristaltic waves. Recently we have been using barium chloride painted on the peritoneal surface with a brush. This was first used by Cannon in his studies on the method of the production of peristalsis in the colon and stomach. We have found that in a dilution of 1 to 500, painted on the stomach within the peristaltic area, it will produce a marked ring which becomes the starting point for peristaltic waves. This may prove of considerable value in determining in the human the point on the stomach at which a

stoma shall be made.* There is at present no way of knowing what relation the site chosen for the anastomosis bears to the peristaltic area.

In a number of cases it was desired to occlude the pylorus, a procedure which has of late aroused considerable interest.

The chief methods advocated for carrying this out are: the silk or metal ligature, inturning by rows of Lembert sutures, complete division with inturning of the ends, and the fascial ligature. The method adopted was that of Bogal Juboff sometimes ascribed to Wilms. The strip of fascia was taken from the sheath of the rectus, and was about 1 cm. wide and as long as seemed necessary. With one exception, the second time used, when the pylorus was later found to be patent, the fascial ligature proved entirely successful in shutting off any part of the stomach required. Microscopic sections showed the grafts to be so incorporated with the surrounding tissues as to be distinguished with difficulty. The convenience with which the graft is obtained and its success commend it to us for use in human cases where closure of the pylorus is deemed advisable. Dr. Archibald has used the method with satisfaction in a number of human cases.

The first group of experiments—those having the stoma in the pyloric end of the stomach and the pylorus open—consisted of four dogs. The anastomosis was placed close to the pylorus, the stoma was made from 4 to 5 cm. long, either on the anterior or posterior surface of the stomach. In all the food passed freely both by the pylorus and the artificial opening. In one case, Experiment No. 14, observed for one and a half hours with the abdomen open, it was seen that only fluid passed by the pylorus, while fluid and semi-solid food was discharged from the stoma. In Experiment No. 18, under the fluoroscope, food was seen passing rapidly out of the stomach by both openings in small jets. These jets, counted over a period of a few minutes, were estimated at seventeen from the artificial to two from the natural opening.

The second group of cases—those with the anastomosis in the pyloric portion and the pylorus closed—consisted of four dogs. In all, the dogs lived and thrived until destroyed at the end of the experiment. Both under the fluoroscope and with the abdomen open food was seen to pass freely by the new opening in jets coincident in time with the peristaltic wave, and then drop back on its relaxation. On no occasion did the food pass out by

* Barium chloride is very poisonous if ingested. We have not dared as yet to employ it in the human, even in dilutions of 1-500, although, so far, the animals have not shown harmful effects with a dilution of 1-100, and even once of 1-20.

gravity, but always intermittently in small jets and usually clearly forced through by the peristaltic action. Whether the stoma was on the anterior or posterior surface, it seemed to act equally well.

In the second main class of cases—those with the stoma placed in the body of the stomach in the area of tonic contraction—four animals were left with the pylorus open, three dogs and one cat. These comprise Group 3.

In none did the stoma function well nor did the animal thrive. The dogs grew gradually thin and occasionally vomited. Under the fluoroscope the stomach was large, peristalsis was usually shallow, food was seen to pass more or less freely through the pylorus, but reached the lower intestine only in small quantities. There was evidence of retention. In one the food was seen to slip rapidly through the long duodenal loop and apparently re-enter the stomach since only small quantities passed on into the bowel.

The fluoroscopic picture was in each case confirmed later by direct observation with the abdomen open. The food passed normally into the duodenum while only small quantities of fluid escaped by the stoma. The reason why the food re-entered the stomach in these animals, when under similar circumstances it does not to any large extent in man, seemed to be the relatively small diameter of the bowel, and the muscular strength of its wall as compared with the human. Invariably *post mortem* the openings into the jejunum, afferent and efferent, appeared as slits or small depressions at opposite ends of a shallow depression. The floor of this depression was formed by the jejunal wall. During the experiments also the jejunal wall was frequently seen while contracting to be depressed into the stoma, completely blocking any discharge of stomach contents.

In Group 4, the second class of cases with the stoma in the body of the stomach, the pylorus was closed. Of these there were six—five dogs and one cat. It was thought that if the pylorus were closed the food might pass more readily by the artificial opening. It is certainly remarkable that this was found not to be the case. The animals took food well, sometimes ravenously, but grew thin and vomited at various periods after taking food. The fluoroscope showed the stomach as a rule moderately filled with food, peristalsis sometimes active, sometimes poor in quality, and little food passing through the opening. With the abdomen open, after the animal had been fed and given eserine, it could be seen that the food entered the pyloric portion beyond the stoma freely and was carried backwards and forwards with the waves of

peristalsis. Only small quantities escaped from time to time by the stoma, and these only during relaxation of the jejunal wall which during its contraction was pressed firmly into the anastomosis. It looked as if these discharges coincided with strong pyloric spasm which practically obliterated the cavity of the antrum and prevented the contents from finding their way into the pyloric portion of the stomach. The cat, under the fluoroscope, showed a retention of food for sixteen hours, but sufficient passed to keep it in fair nutrition and temper for a period of four months after the operation. It is to be noted that in none of these cases was there any mechanical obstruction at the opening, as was shown by grasping the stomach in the hand. It required only slight pressure to cause fluid and semi-solid material to come away freely.

In view of certain observations made in two of the cases in group four, when the discharge of food from the artificial opening seemed to correspond to periods of strong contraction of the pyloric portion of the stomach, during which its lumen was obliterated; it was suggested by Dr. Scrimger that if the stomach were tied off immediately distal to the anastomosis, and the food prevented from entering the stomach beyond, it might improve the mechanical conditions favouring the discharge of food from the artificial opening. Two experiments were carried out in which the stoma was placed well away from the pylorus, and the whole of the stomach beyond the stoma cut off by a strip of fascia immediately distal to the anastomosis. In the cat the stoma was placed in the fundus and the whole of the peristaltic area tied off. In the second case, a dog, the anastomosis was placed at the beginning of the peristaltic area. Under the fluoroscope food in both was seen to pass freely and readily through the artificial opening, none passed by the pylorus. The animals thrived till destroyed at the end of the experiment. Some weeks after the operation the animals were anaesthetized after being fed, and the abdomen opened. In the cat fluid escaped freely from the anastomosis. When the stomach was opened it was found to contain only semi-solid dryish material. In the dog fluid and semi-solid food was rapidly discharged through the new opening. The pyloric end beyond the ligature was found completely empty and free from peristaltic activity.*

* March 27th, 1914. A good deal of the laboratory work of the past winter on this subject has been devoted to elaborating this idea of excluding not only the pylorus, but the whole of the stomach distal to the stoma, in the expectation of improving evacuation. Briefly, it may be said that this expectation has been amply justified, and it now becomes a question whether this procedure is not to be recommended in the human.

Summarizing the results of these observations we can say:

1. That the anastomosis in the cardiac portion, with the pylorus open, will, as has been observed by others, allow most of the food to go by the pylorus. It will afford no protection to an ulcer in that situation. More than this, in dogs at least, most of the food leaving by the pylorus re-enters the stomach through the anastomosis, and the animals will not do well; they vomit and grow thin.

2. That the addition of the exclusion of the pylorus will protect an ulcer, but will not greatly improve things otherwise. The stomach will still fail to empty. The animals will vomit and grow thin.

3. That the placing of the stoma in the pyloric portion improves matters enormously. Here food will pass out by the stoma chiefly, though partly also by the pylorus if open. If an ulcer is present, it can be efficiently protected by excluding the pylorus. In both cases the animals do well.

4. That if an ulcer is found proximal to the pylorus anywhere in the pyloric portion, it can still be protected by laying a fascial ligature around the stomach between it and the anastomosis; further, that in animals at least, an anastomosis placed in relatively the same position as that necessarily used in the human, if a short-loop operation is done, is much more efficient when the fascial ligature is applied immediately distal to the stoma, than when placed at the pylorus.

What is the reason for the inefficiency of the stoma placed in the cardiac portion and its efficiency when in the pyloric portion? The answer, we think, is to be found in the observations of intra-gastric pressure made by v. Pfungen, Kelling, Cannon and others. They proved that the pressure in the cardiac portion during digestion was low, but strikingly constant, variously estimated at from 6 to 16 cm. of water, while in the pyloric portion it is intermittently high, estimated at from 60 to 120 cm. of water, during active peristalsis.

The cardiac portion is practically without peristaltic activity; its function is to maintain by tonic contractions a constant low pressure. The pyloric portion is strongly peristaltic, its muscle rhythmically develops relatively great power. The low pressure in the cardiac portion is insufficient to force food out of the stoma so long at least as there is an easier path into the pyloric antrum. The high pressure in the pyloric end will force the food rapidly through any opening that is available.

Case Reports

TRANSVERSE PRESENTATION WITH UNUSUAL SEQUELÆ

I HAVE called this case unusual chiefly because of the sequelæ, but the abnormality of transverse presentation is not in itself an everyday occurrence. In one hundred and fifty labours, during the last three years conducted by either Dr. Smith or myself, there were two cases. I think it would be correct to add to these one hundred and twenty cases conducted by midwives, because when we are not called in attendance the labours are normal in every way. According to Hirst's "Obstetrics" this anomaly is found about once in one hundred and twenty-five labours; Wright gives one in two hundred labours.

Both cases to be mentioned in this article were at first managed by a midwife, a different one in each case, and in each case the patient was neglected as long as possible. The difficulty with these attendants here is, I suppose, the same as elsewhere. They think their knowledge is equal to that of an obstetrician, and when a labour has continued for a longer period than usual, it is as a rule the woman or her husband who sends for the doctor.

There is no use in going extensively into a discussion of the supposed etiology, diagnosis, prognosis and treatment of this condition, for that can be found in any standard text-book. The successful conducting of a case can only come through an actual encounter, and there are many things that cannot be taught through the medium of the pen.

CASE REPORT

Mrs. K., age thirty-two, mother of ten children, born without difficulty under the hands of a midwife. She has had one miscarriage, which occurred one year ago. As far as I could gather from the information which she gave me in the present case, the foetus was nine and a half months old when labour set in.

I was called to attend her at five p.m. on February 25th, 1913. She lived across a bay about two miles away, and one required an hour in which to reach her. The patient was in bed (it is often

otherwise) and seemed to be in great agony. A midwife, her mother-in-law, had been in attendance since ten a.m. Nobody knew whether the membranes had ruptured or not, but I was told there was something to be seen, and that there had been slight bleeding. Turning down the bed-clothing disclosed a hand and forearm projecting from the vulva. At once the cause of the pain was evident, and as she had been in this condition for a couple of hours, I lost no time in getting her under chloroform. The pulse rate was 120, and its volume very small. Her face was very anxious. In short, she was in a condition of shock from uterine dystocia. In the meantime I had sent for Dr. Smith, with whom I am associated, and who I knew was at home, and upon his arrival we at once completed preparations for delivery. Upon catheterization a very small quantity of urine came away. There was continual slight trickling of blood alongside the arm. We completed a version by combined internal and external manipulations without much difficulty. I had previously ascertained that the head occupied the left iliac fossa, and the breech the right, and that it was a case of left dorso-anterior presentation. Attending women told me that the hand had been prolapsed for two hours, and it was this fact together with the intense pains, that forced the midwife to call us in. There was some difficulty in replacing the arm, but after that turning was easily accomplished, the external manipulations being of great assistance. There was considerable spurtling of blood during the operation. I gave 1 c.c. of pituitary gland extract hypodermically just before delivery was completed, as in most cases the action is apparent in three minutes. She was also given ergot by the mouth at the same time, as I did not feel perfectly safe with the other alone. The placenta and membranes followed closely upon the child, and the uterus contracted well and remained so. The baby lived a few minutes but could be kept alive no longer, in spite of sustained effort for a long period. We replaced the patient who was very weak, wrapped her in hot blankets, surrounded by hot water bottles and other hot articles, gave her whiskey; and normal saline by the rectum. Improvement was very gradual. She remained in a semi-conscious state, breathing heavily, for about two hours.

Questioning among the attending friends revealed the following: She had been exceptionally well during her pregnancy, the bowels had been regular almost every day, and she had done all sorts of hard work, washing included, the whole time. Her feet and hands had swollen slightly during the last month. During

the last two weeks she had complained of pain in the right lower abdomen, which would come every day, last a couple of hours, and leave her entirely. The pain was not very severe.

A small quantity of urine removed before leaving the house, and examined at once, showed a small amount of albumin. By this time she had recovered a good deal, and was able to answer questions readily, and take a cup of coffee.

February 26th, ten a.m. Patient seemed very well. On passing a catheter only a wineglass of bloody urine came away. There was very marked tenderness over the region of the ileocæcal valve, and the whole abdomen was distended and tympanitic. She had taken about half a cup of tea, and a small piece of toast. Her pulse rate was 100, and temperature 99.3° . A large soap-suds enema brought away a small amount of fæces, and no gas. I ordered turpentine stupes changed every five minutes.

At four p.m. there was a good flow of urine involuntarily, and as nothing came through a catheter passed an hour afterwards, I judged that there was a fistulous opening in the bladder. It was impossible to know the amount and physical characters of the lochia, because the napkins were continually saturated with urine. There was also at this time a very strong ammoniacal odour. The temperature was 99.3° , and pulse 98. There was still marked tenderness over the ileocæcal region, and some muscle rigidity. The distention was still marked. I gave orders that she was to have nothing but bits of ice to suck.

February 27th, two p.m. Patient seen at this time had a temperature of 100° , and pulse rate of 120. She had been in great suffering since three a.m., and I was unable to reach her on account of ice. She had been vomiting every few minutes since early morning. The amount of distention was very much greater and seemed to be much greater in the upper zone of the abdomen. She was as tender as ever in the right side, but I felt certain that her present symptoms were from an acutely dilated stomach. The vomitus was of greenish, black colour, having a peculiar odour, neither bilious nor fæcal. There was no visible peristalsis anywhere. Considering the fact that she had taken nothing for a couple of days the quantity of stuff, about two quarts, was striking. Chloroform was necessary for passing the stomach tube satisfactorily. There was a great gush of gas, and small particles of solid and liquid were very forcibly blown through the tube. I used a gallon of solution of bicarbonate of soda for washing the stomach. The vomiting was at once stopped, and the distention was greatly

diminished. The tenderness remained about the same, and a distinct tumour could now be made out. This tumour at its upper end was about an inch to the inner side of the anterior superior spine, and extended downward and inwards across the right iliac fossa for a distance of six inches. In width it was about two inches. The passage of a rectal tube caused no expulsion of gas. At eleven p.m., vomiting recurred, but gastric lavage again relieved it at once. At this time the temperature was 100°, and pulse rate 120. There was no indication of puerperal sepsis. The urine still passed away freely, and involuntarily. Tying in a catheter made no difference.

There was every indication of intra-abdominal trouble, but an operation was out of the question owing to circumstance and surroundings. The lesion, whatever its exact nature, was confined solely to the right lower division of the abdomen. The rest of the cavity, though distended, was soft and could be palpated freely without causing any distress. The tumour was so tender that she could not bear to be stirred even very slightly.

At this time we gave an enema composed of two eggs well beaten, and one half ounce of turpentine. This was injected, and then bloated up the bowel by means of one pint of thin gruel. After about twenty minutes this was expelled along with a large amount of gas. The tenderness was somewhat relieved. After this we gave a hypodermic injection of morphine grs. $\frac{1}{4}$ and atropine grs. 1-150, and ordered thin, large linseed meal poultices, changed frequently.

February 28th, eleven a.m. Condition about the same. Breathing entirely thoracic, and laboured. Face anxious. Pain and tenderness had been greatly relieved by the stuping and poulticing. She was well propped up in bed, but the position was uncomfortable. At eleven p.m. I was called again because the condition had become much worse. I did not reach the house before two a.m. She had been suffering since twelve o'clock the previous day, and had been vomiting continuously. Pulse rate was 160, very irregular, running and small in quantity. Her brow was clammy, and she was barely conscious. She managed to gasp out the word chloroform, as she knew it meant relief at once. About a gallon of dark, greenish fluid had been vomited. Almost every half minute she would retch, and bring up a mouthful. Her lip and chin were scalded quite red. The amount of distention was very great, and mostly in the upper part of the abdomen. Great relief followed as before upon gastric lavage, using one gallon and

a half of the soda solution. The distention almost entirely disappeared. Between three and six a.m., she received a large quantity of normal saline very slowly, *per rectum*, and 1-50 gr. atropine sulphate hypodermically. At ten a.m. her condition was greatly improved. Pulse rate 112, temperature 99.1°. No vomiting. Pain and tenderness over tumour about the same. I gave an enema of two eggs with salt and sugar, which she retained, and then left her again.

At four p.m. I received a telegram saying that she had a great change (meaning a bowel movement). I saw her at eight p.m. What she had passed was mostly fluid, although a few hard masses were intermixed. The colour was very dark, brownish, and there were about two quarts. With this great quantities of gas had been expelled, and the abdomen collapsed to almost its natural size. The tumour remained the same size, but was distinctly less tender. A mild diarrhoea continued for a couple of days, and was then controlled by chalk and opium mixture.

From this time on the history in detail is uninteresting. The patient's appetite returned in full force, the bowels moved regularly, and the tumour, one could say, could be seen to disappear rapidly. On the thirty-first I could feel nothing at all.

As soon as possible we examined the vagina and uterus, and found a vesico-uterine fistula going through the anterior lip of the cervix. At the time of examination a slough came away, in size about three-quarter inch by one-quarter inch by one-eighth inch. The fistula was longest sideways. The urine was very ammoniacal for a while, and helped to cause a great deal of irritation, in spite of all we could do. There was also a very bad odour from the healing fistula, which diminished greatly after the slough came away. Administration of benzoic and boric acids in a solution corrected the urine, and the vagina was douched twice daily with lysol solution. Congestion of the bases of the lungs and a cough worried us a little. She sat up in a chair for the first time on March 18th. When in a sitting posture the urine did not flow away, but did so upon the slightest movement being made.

On March 29th, the fistula was examined again. We found it very difficult to expose. It was no larger than a lead pencil of ordinary size. We were unable to expose it sufficiently well to enable us to operate. There was a temperature of from 99° to 101° in the evenings, for a couple of weeks, which then left entirely, and remained normal.

This report is not very complete regarding temperature, pulse

and respirations, etc., but there were occasions when I was unable to visit her for days, and there was nobody who could do it for me. I have just given the outstanding features of the case. On March 24th, twenty-seven days from the date of delivery, the patient looks as well as ever, and would be so, if it were not for the annoyance of the urinary trouble.

As we did not have proper facilities for undertaking the cure of the fistula, we sent her to the General Hospital of St. John's on July 4th, but on August 1st she returned as the operation was not advised. An operation has since been performed successfully by Drs. Murdoch Chisholm and H. K. McDonald at the Victoria General Hospital, Halifax. From the latter I have learned that the operation was very difficult on account of the small amount of tissue upon which to work, and the difficulty of access. The work was done *per vaginam*, and at one time it was thought that a hysterectomy would be necessary. However, persistent effort resulted in a perfectly successful issue.

In closing this report, the writer wishes to state that any criticisms or other comments on this case would be noted with pleasure.

Burin North, Newfoundland. GILBERT PARKER, M.B. (Tor.).

THE annual report of the Superintendent of the Provincial Hospital for the Insane, at St. John, New Brunswick, for the year ending October 31st, 1913, has now appeared. During the year 173 patients were admitted, which with those already in residence made a total of 767 persons; 56 patients died and 97 left the hospital. Since 1848, when the asylum was first opened, 7,580 cases have received treatment, 4,362 men and 3,218 women. Of these, 2,424 have died and 4,556 have left the hospital, 3,005 of whom appear to have had reason restored. An Act was passed by the legislature last session which requires that, dating from January 1st of the present year, municipalities shall contribute one dollar a week towards the maintenance of all patients whose friends do not contribute at least that amount towards their support.

Editorial

PROVINCIAL ASSOCIATIONS

NO one pretends that the organization of the medical profession in Canada has assumed its final form. From the very beginning it has proceeded according to the needs of the case. A chance meeting of physicians in any given locality developed into formal assemblages. These merged with similar ones and finally became provincial associations. As the provinces united, the organization of the profession enlarged; working arrangements for education and practice grew up, until finally all who were engaged in medicine were working in harmony for the common good. The formation of the Canadian Medical Association and the enactment of Dominion Registration were the last stages. They were not the outcome of a preconceived theory; they were merely a response to the needs of the case.

Now that the Association has become so firmly founded, and its necessity so obvious, that is, if there is to be an organic profession, growing as the country grows, rather than a congeries of conflicting interests, the time has come to examine the structure, to ascertain if there are any unnecessary stresses and strains which can be avoided.

In the outset it was considered advisable that certain of the rights inherent in the provincial associations should be either sacrificed or held in abeyance. To enable the large body to obtain a foothold each provincial association agreed to forgo the right of meeting on the year in which the larger association met in the province.

Upon the smaller provinces this self-denying ordinance entailed little hardship. They received an important as-

semblage in exchange for a more humble and local one, and a visit of all the leading physicians in Canada. In Quebec there was no sacrifice whatever, since there was no provincial association in that province to have its meetings interrupted.

Ontario stands in a different category. On account of the importance of that province in respect of size, population, cities, and medical schools, the annual meeting is bound to be held in Ontario once in four years rather than once in a decade, as in the case of the smaller and more remote provinces. Besides, the Ontario Medical Association ranks in size and quality next to the Canadian Association, and the suspension of a meeting is all the more hardly felt. Members are deprived of hearing, and of taking part in, discussions which, while they might be entirely suitable for a provincial meeting, might be considered of too restricted a nature for the larger body. Besides, the presence of a large number of eminent members of the profession in Toronto is not so remarkable an event as it would be in Charlottetown or Vancouver. A provincial meeting is usually of a clinical character, and members in Ontario are deprived of an excellent opportunity of availing themselves of the large hospital facilities for teaching and learning which are to be found in Toronto.

At the annual meeting in July the abrogation of this rule might well be made a matter for consideration. Meetings in Toronto of both associations, simultaneously or in succession, would enhance the value of each. Visiting members from outside of the province would doubtless be made welcome, as they are at present, and they would see much to instruct them. Most important, a substantial grievance would be removed; and as members from Ontario so largely predominate in the Association the matter is to that extent in their own hands. They may be assured of the sympathetic coöperation of members from the other provinces.

INTRAPROVINCIAL AFFILIATION

WHEN the Canadian Medical Association was re-organized seven years ago with the object of making the profession in Canada a really united body, the means proposed to accomplish this object were mainly two—the establishment of an official journal and the affiliation of the various provincial and local societies with the national association. The JOURNAL is, and will continue to be, the main link binding the individual physician to the Association. It affords a basis of permanent membership. Since its establishment in 1911, there has been a gratifying increase in membership and in the attendance at the annual meetings. In the matter of affiliation progress has been made. All the provinces except Quebec, where the diversity of language has unfortunately prevented it, have their own medical associations. These are all now officially affiliated with the national body. The by-laws of the latter provide that each affiliated society may elect to the Executive Council, the governing body of the Canadian Association, a number of delegates proportionate to its own membership. Hitherto the Council has consisted only of the fifteen members elected at the annual meeting, but it is expected that in the future all the provincial associations will appoint their delegates. The Council will then become a more truly representative body.

But when this has been accomplished the work of organization is still far from completion. In order to cement the profession thoroughly together the foundation of the edifice must rest on the broader basis of the district and city societies. These should form the organic constituents of their respective provincial associations in much the same way as the provincial associations are in turn affiliated with the Canadian Association. The scheme was discussed at the various annual meetings last summer, and most of the provinces reported favourably upon it. In some, definite action was taken, notably in Saskatchewan, where the city societies

are now affiliated with the provincial association. The Saskatchewan Association is a particularly vigorous body, and publishes an admirably conducted official monthly, the *Western Medical News*.

Throughout Canada there are active medical societies in most of the larger towns, but in the country districts they are not nearly as numerous as they ought to be, even in the more populated parts of the country. Where there are too few physicians in any one county, two or more neighbouring counties should combine to form a society. An excellent suggestion was that of Dr. Bruce in his address as president of the Ontario Association in 1912. He proposed that a society should be established in each of the ten districts into which that province is divided by its recent Health Act. Each society would thus include four or five counties. The advantages to the individual physician of societies such as these, with their frequent meetings, are obvious. Their value to the provincial associations will depend on their number and on the closeness of their affiliation. As at present constituted, the membership of most of the provincial associations is not permanent, but consists of those who happen to attend the annual meeting. If membership in the local society could be made to carry with it membership in the provincial association, the strength and influence of the latter would be enormously enhanced.

While this is a matter for each province to work out in its own way, the Canadian Medical Association cannot fail to be vitally interested in the progress of intraprovincial organization, and interested that it should be carried out not only with thoroughness, but with as much uniformity as the varying circumstances may permit. The future progress of the Association depends upon it. With more thorough organization will come increased membership, and the publication of the JOURNAL as a weekly. If anyone can doubt the value of such organization, let him consider the success of the British and of the American Medical Associations, and the immense power for good which they wield.

ANTITYPHOID VACCINATION

THE evidence which has been accumulating during the past ten years is such as must convince the most sceptical of the efficacy of prophylactic vaccination against typhoid fever. The use of a bacterial vaccine for this purpose dates from some experiments of Sir Almroth Wright in 1897; and to him belongs the chief credit for the introduction and development of the method. Associated with him in the work was Colonel Sir William Leishman, now professor of pathology in the Royal Army Medical College, who during his recent visit to Canada spoke on this subject in Ottawa before the Association of Medical Officers of the Militia, and in Toronto and Montreal. Those whose privilege it was to hear him cannot fail to have carried away the impression of an admirably told history of a great work thoroughly performed.

The fundamental experiments were carried out in the British army. Inoculation was first practised on a large scale during the Boer war, but resulted in a comparative failure. Under the conditions of active service it was found impossible to follow up the cases and collect reliable statistics. One thing, however, had been adequately proved, namely, the harmlessness of the inoculation. Plans were then carefully prepared for a convincing demonstration. An active propaganda was instituted in order to gain the confidence of Mr. Atkins and, what was hardly less difficult, the approval of the authorities. These objects attained, the experiment was carried out during the five years from 1904 to 1909. With each regimental unit that left England in that period for India or the tropics was sent a trained diagnostician, that is, one who could intelligently administer the vaccine, keep the records, and work out to its definite cause every case of continued fever. Twenty-four regiments were thus studied during an average period of two years for each. Every soldier who could be induced to volunteer was inoculated with

two doses of the vaccine. The results were briefly as follows: Of 10,000 men inoculated 56 took typhoid of whom 5 died, while amongst 8,936 uninoculated there were 272 cases and 46 deaths. In other words, the uninoculated soldier was more than five times as liable to take the disease and, if he took it, nearly twice as liable to succumb. Treated and untreated were in almost equal numbers and were exposed to the same conditions. In short the statistics were unimpeachable, and the case was proved.

Moreover the results then and since obtained are better than these figures would indicate. Many of the cases occurred in men who had been inoculated with a superheated vaccine, which has since been proved to be inefficient. Eliminating these, the protection was in the proportion of ten, instead of five, to one. Sir William Leishman expressed his belief that the protection afforded by the vaccine, as it is now prepared, lasts two years, often longer, and is almost absolute for the first six months. In the Indian army at present 95 per cent. of the men are voluntarily inoculated, and the number of deaths from typhoid has steadily fallen from an average of about 250 annually up to the year 1906 to 22 and 26 in the years 1911 and 1912. The experience of other countries has uniformly confirmed the value of this method of prophylaxis, so much so that for some time inoculation has been compulsory in the German, French, and United States armies.

The vaccine is prepared in a simple manner from a broth culture of the bacillus, sterilized by heating for one hour at a temperature of 53°C. It consists of a suspension of the bacilli, one hundred million to the cubic centimetre of salt solution. It is given subcutaneously, an initial dose of 0.5 cc. being followed by one or two doses of 1 cc. at intervals of five to ten days. The reaction is generally trifling. Redness and swelling appear at the site of injection the following day, often with slight and transitory fever and headache. The fear has been widely expressed, based chiefly on

theoretical grounds, that the inoculation would be immediately followed by a "negative phase," a short period during which the subject would be more susceptible to infection. Practical experience, however, including the use of the vaccine during epidemics, has proved this not to be the case; indeed, this period is definitely one of heightened resistance.

In civil practice the method deserves to be more generally used than it has been up to now. Nurses constantly exposed to typhoid are known to be about eight times more liable to infection than the ordinary individual. In the hospitals of Massachusetts during three years there were only two cases among 1,400 inoculated nurses, while there were eight among the 670 uninoculated in the same institutions. In several hospitals in the United States nurses and internes are now required to be inoculated.

The typhoid rate in almost all parts of Canada is a positive disgrace, a disgrace to which long familiarity has made us callous. With the coming of spring we may expect the usual crop of epidemics. Indeed they have already appeared, notably in the district of St. Johns, Quebec. In antityphoid vaccination we have a proved remedy, comparatively simple, and not dependent on the indifference of municipal authorities. If the interest of the profession and the public can be sufficiently aroused, it is certain that by the use of this prophylactic much illness could be prevented, and many useful young lives could be saved, which otherwise will inevitably be sacrificed.

THE fifth annual session of the Clinical Congress of Surgeons of North America, will be held in London, during the week commencing July 27th, next. Temporary offices for the Congress have been established in the building of the Royal Society of Medicine, 1 Wimpole Street, London, W., and enquiries may be addressed to the secretary-general, Dr. Franklin H. Martin. It is expected that from twelve to

fifteen hundred surgeons from Canada and the United States will attend the meetings.

THE seventieth annual meeting of the American Medico-Psychological Association will be held at Baltimore from May 26th to 29th. A preliminary programme has been prepared and may be obtained from the secretary, Dr. Charles G. Wagner, Binghamton, N.Y.

IN his report for the year 1913, Dr. J. V. Anglin, the superintendent of the Provincial Hospital, St. John, New Brunswick, comments on the increasing numbers of mentally afflicted or defective persons who seek admission to the hospital. The provision of suitable accommodation and the maintenance of such persons is becoming a heavy tax upon the province. What will be the end? Are the asylums to be enlarged year by year as the number of patients increases? The results of treatment offer little encouragement and, in the majority of cases, the most that can be expected is a more or less permanent restoration. However, although the subject is somewhat shrouded in gloom, a more hopeful attitude of mind comes with the reflection that increased knowledge may teach us more of the nature, causes, and possible means of prevention. Dr. Anglin refers also to the necessity for a trained pathologist in every asylum, "whose sole duty it should be to study insanity in all its aspects and communicate the results of all his investigations to the people at large."

THE first number of the *Indian Journal of Medical Research* appeared last July. The journal is a quarterly publication and is edited by the Director General of the Indian Medical Service, and the Sanitary Commissioner with the Government of India with the collaboration of other medical authorities in India. The objects of the publication of this

journal are stated to be: "the prosecution and assistance of research, the propagation of knowledge and experimental measures generally in connexion with the causation, mode of spread, and prevention of communicable diseases." It is the first publication of its kind in India to take up the question of research work in connexion with sanitation and hygiene. The October issue contains many interesting articles, among them a paper by Captain L. Bodley Scott on the value of nastin in the treatment of leprosy. Forty-nine patients were treated, of whom eight were reported cured after a period of treatment varying from four months to three years and a half. No new leprous lesions were developed in any of the cases during the treatment.

UNDER the conditions annexed by the testator, the Samuel D. Gross Prize of fifteen hundred dollars "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize, shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page, it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

Essays in competition should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 S. 22nd Street, Philadelphia," on or before January 1st, 1915. Each essay, which must be written by a single author in the English language, must be typewritten, distinguished by a motto, and accompanied by a sealed envelope bearing the same motto,

containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay. The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year. The committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

THE pathetic fate of Captain Scott and his companions aroused a world-wide feeling of deep pity, not unmingled with admiration for their heroism. In Canada the memorial to Captain Scott is to take the appropriate form of a Sailors' Institute to be established in the western seaport, Vancouver, where there is need of an institution similar to the one that has done such good work in Montreal. Scott himself, while on his fateful journey, wrote as follows to the British and Foreign Sailors' Society, which has undertaken the present memorial: "The more I sail the sea, the more certain I am of the excellence of the work done among seamen by such organizations."

As a special tribute to Dr. E. A. Wilson, from the medical profession of Canada, it is proposed that an Officers' Room shall be provided for and furnished, and for this purpose medical men are asked to make a specific contribution of two dollars. There should be a hearty response to the appeal. Subscriptions may be sent to the Rev. Alfred Hall, senior chaplain for Canada of the Society, 510 Ontario Street, Toronto.

AN Act has been passed by the Dominion Government to prohibit the manufacture and importation of matches made with white phosphorus. The Act is cited as, "The White Phosphorus Matches Act," and will come into force on the first day of January, 1916. Any person convicted of violation of the provisions of the Act will be liable to a fine not exceeding five hundred dollars and costs.

THE Medical School of the Melbourne University, the first school of medicine to be established in Australia, will celebrate its jubilee from April 30th to May 2nd. As a fitting memorial of the occasion, it is proposed to establish a University Fund for Clinical Research. It is possible that funds will be provided by the State Government for the appointment of assistant professors of anatomy, physiology, and pathology at the university.

THE American Breeders' Association, in which the Canadian Medical Association holds a delegate membership, has changed the name of its organization to the American Genetic Association, and that of its journal from *The American Breeder's Magazine* to *The Journal of Heredity*, "a monthly publication devoted to plant breeding, animal breeding, and eugenics." The wider appeal which these changes imply would seem to be justified by the excellent scientific character of this association's publications.

A SYSTEM of medical inspection of school children has been established in most of the larger western cities. In Winnipeg, two physicians are employed at an annual salary of \$1,000 each, and are assisted by nurses who receive \$75 a month for their services: there are thirty-eight schools and 18,976 pupils. In Calgary, two physicians are engaged in the work of inspection and their remuneration amounts to \$2,700 a year; a school nurse also is employed at an annual salary of \$900, and the proposal that four other nurses shall be engaged to assist in the work is now under consideration. Regina has eight schools and 2,846 pupils and there the inspection is done by two nurses who receive \$1,300 and \$1,200 a year respectively. At Saskatoon, where there are ten schools and 3,300 pupils, the medical inspection is done by one physician and two nurses, who each receive

\$1,200 a year. At Prince Albert one nurse is employed, whose yearly remuneration is \$1,000. In Edmonton, with its twenty-two schools and about 7,000 pupils, one physician, who receives \$3,500 a year, and two nurses, who each receive \$1,000, are engaged in this branch of medical work.

ALTHOUGH it is usually considered that the amount of blindness in Egypt has declined within the past twenty years, it is stated in the report of the Ophthalmic Section of the Egyptian Department of Public Health, that "out of 43,668 patients examined during 1912, 6,939 persons were found to be blind in one or both eyes, that is nearly 16 per cent. It is probable that there has been a small diminution as the result of the enforcement of compulsory vaccination, but enough has been said to show that ophthalmic conditions are still appalling, and no relaxation must be allowed in the efforts to improve them." It has been decided that for the present the most effectual way of improving these conditions is to establish permanent hospitals in the capital town of each province, each hospital to be provided with a travelling tent-hospital. These will serve as centres, from which various branches of work will develop, such as the treatment of pupils in schools and *kuttabs*, lectures on ophthalmic hygiene, distribution of pamphlets containing instructions for the prevention of infection, provision of first aid in eye diseases in the remoter villages, and talks on cleanliness to collections of women.

Book Reviews

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. VOL. XXXI., 1913. Edited by ARCHIBALD MACLAREN, M.D. For sale by William J. Dornan, Philadelphia.

The single contribution from a Canadian source, which we notice in these transactions, is Dr. Shepherd's note on cancer of the thyroid and its extension to the lungs by means of the blood vessels. The obituary notices are numerous, and they are done with admirable taste. They remind us of the passing of Lister, Billings, Oviatt, Macmonagle, Horwitz, Ferguson and Bristow.

THE HISTORY OF MEDICINE, WITH MEDICAL CHRONOLOGY, BIBLIOGRAPHIC DATA, AND TEST QUESTIONS. By FIELDING H. GARRISON, A.B., M.D., Principal Assistant Librarian, Surgeon-General's Office, Washington, D.C., editor of the "Index Medicus." Octavo of 677 pages, many portraits. Cloth, \$6 net; half-Morocco, \$7.50 net. Philadelphia and London : W. B. Saunders Company, 1913. Canadian Agents : The J. F. Hartz Company, Limited, Toronto.

Any history of medicine is a good history. There is always something in it which is not readily accessible elsewhere, and old matters are set in a new way. The subject can never be exhausted, since the history of medicine is the history of humanity. No book can be final, not even Neuburger's, that massive work which is now issuing with the Oxford publications. No one had ever better facilities for writing a history of medicine than Dr. Garrison. As principal assistant in the library of the Surgeon-General at Washington, and editor of the "Index Medicus," it was inevitable that he should have dealt with the material at his hand in that enormous repository of books. Nothing seems to have escaped his experienced eye. To read any elaborate history of medicine during consecutive hours is a heavy task, but Dr. Garrison continually refreshes his reader with interesting notes, and entertaining descriptions of the personalities which he passes in review. The old world is not neglected; but the period from the dissemination of Greek medicine in Alexandria and Rome is rather scantily dealt with, and something less than justice is done to Indian and

Arabic medicine. No other book contains so full an account of the modern period, that is, from the end of the seventeenth century, and it is enriched by pictures of many persons whose names are familiar. The work is one of profound research and of massive industry, and the author is fully sensible of the importance of the subject in a well ordered scheme of education.

PATHOGENIC MICRO-ORGANISMS. A TEXT-BOOK FOR PHYSICIANS AND STUDENTS OF MEDICINE. By WARD J. MACNEAL, Ph.D., M.D. Illustrated. Price, \$2.25 net. Philadelphia: P. Blakiston's Son & Company, 1914.

This book is the sequence to Professor Williams' "Manual of Bacteriology," which had gone through five editions. The author, having found himself unable from press of other duties to undertake a further revision, has left the task in the hands of Dr. MacNeal. The book has not suffered by the change. To the good qualities in the former editions new ones have been added.

IONIC MEDICATION THE PRINCIPLES OF THE METHOD AND AN ACCOUNT OF THE CLINICAL RESULTS OBTAINED. By LEWIS JONES, M.D. Second edition. Price 5s. net. London: H. K. Lewis, 1914.

It seems only a few weeks since we called attention to the first edition of this book, and now a second is required. The changes are slight; indeed few changes were needed.

A MANUAL OF OPERATIVE SURGERY WITH SURGICAL ANATOMY AND SURFACE MARKINGS. By DUNCAN C. L. FITZWILLIAMS, M.D., Ch.M., F.R.C.S. (Eng.), F.R.C.S. (Edin.). Toronto: The Macmillan Company of Canada, Limited, 1913.

The author has undertaken a difficult task in the attempt to produce a work for the instruction of the apprentice and of the "journeyman craftsman," but he has succeeded up to a reasonable expectation, especially as he has chosen to treat of the main points in surgical and surface anatomy as well. He is probably right in the assumption that the book will be of little value to the "surgeon," and yet one who performs the operations described might fairly be considered in that class, unless indeed the term "journeyman craftsman" is meant to indicate a mere bungler. Its value for the student is undoubted. We think the author is a little too

dogmatic about the "manifest absurdities" of the Basle nomenclature. In any system there are absurdities, but the work of the anatomists who devised it is not to be dismissed in contemptuous terms. We can well afford to await the results of the meeting of the English speaking anatomists, which the Anatomical Society of Great Britain is about to call, before condemning the conclusions of their predecessors.

A TEXT-BOOK OF PHYSIOLOGY: FOR MEDICAL STUDENTS AND PHYSICIANS. By WILLIAM H. HOWELL, Ph.D., M.D., Professor of Physiology, Johns Hopkins University, Baltimore. Fifth edition thoroughly revised. Octavo of 1,020 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$4.00 net; half morocco, \$5.50 net. J. F. Hartz Co., Toronto.

Professor Howell has succeeded in his endeavour to overlook no significant advance in physiology, which has been made in the past two years, that is, since the appearance of the previous edition. The book was first published in 1905, and five editions have appeared since that time. This demonstrates the activity of physiological investigation and the determination of the author to overtake it. The fresh matter deals mainly with the subject of metabolism upon which new light is appearing daily and illuminates many of the intermediary stages. The functions of the various proteins and the capacity of the animal organism to produce nitrogen from inorganic sources are beginning to be understood. All this receives consideration; yet the author has kept in view the limitations of the student mind, and has not hardened his book with speculation or surmise. It is judicious without being meagre.

THE DISEASES OF CHILDREN. By SIR JAMES FREDERIC GOODHART, Bart., M.D., LL.D., F.R.C.P. Tenth edition, edited and revised by G. F. STILL, M.A., M.D., F.R.C.P. Price, \$4.50. Toronto: The Macmillan Company of Canada, Limited, 1914.

This book is the outcome of a small manual which was published nearly thirty years ago by Messrs. Churchill in a series of students' guides. It is now in the tenth edition, and has long since outgrown its humble origin. The revision is by Professor Still, although the author himself took a large share in the work. The book retains that quality of strong common-sense and personality which has commended it to so many generations of students.

THE BIOLOGY OF THE BLOOD-CELLS, WITH A GLOSSARY OF HÆMATOLOGICAL TERMS; FOR THE USE OF PRACTITIONERS OF MEDICINE. By O. C. GRUNER, M.D. (Lond.), Pathologist to the Royal Victoria Hospital, Montreal; Assistant Professor of Pathology, McGill University. Bristol: John Wright & Sons, Limited. Toronto: The Macmillan Company of Canada, Limited, 1913.

A CODE SYSTEM FOR THE HOSPITAL PATHOLOGICAL LABORATORY. By O. C. GRUNER, M.D. Murray Printing Company, Toronto. Price 65 cents.

Professor Gruner's book on "The Biology of the Blood-Cells" demands something more from a Canadian journal than the adulation or perfunctory praise, which usually falls to the lot of one who writes within the country. The book issues from an important hospital and a celebrated medical school. The author has been for many years closely identified with the teaching of pathology in Canada; and the subject which he has made his own, has become one of profound scientific interest, especially since the researches of Pappenheim were published. To this writer Professor Gruner expresses his obligation, and the profession in turn is obliged to Professor Gruner for having, for the first time in English, set forth the results of Pappenheim's researches in a completely intelligible form. This alone is a feat in itself, since few who are born outside of the Ghetto can master Pappenheim's harsh and penurious German.

Let it be said at once that Professor Gruner's book is strong meat for the novice, and can be assimilated by those alone who have accustomed themselves to all the technique and knowledge previously extant in this extremely specialized department of biology. In the last chapter he does sum up his material and presents his view of the origin of the various elements in the blood and the changes they undergo in disease; but in the six previous chapters the presentation is direct rather than critical; and criticism can only be made by one who has access to the original sources of information. For such guidance from so sure a hand the average reader would have been thankful. And yet upon one point at least, and that a not unimportant one, the present reviewer feels qualified to interpose an objection. This concerns the subject of the platelets. One who has followed the work of Homer Wright, and has seen his preparations and those of Ogatta, and is aware of the high authority of those who have confirmed Wright's views upon the mega-

karyocytic origin of the platelets, will think that Professor Gruner has dismissed those views too summarily when he classifies them, on page 87, with "other theories that are unimportant." Yet he follows his own line boldly, although he admits his divergence from Sternberg and Schridde. Upon other points one could wish that he were equally dogmatic. In dealing with the properties of the eosinophile granule, for example, one is left without much guidance. In a single paragraph seven references are given to results which are contradictory rather than confirmative, and no judgement is rendered.

By this book Professor Gruner lays claim to a place in the splendid company of the hæmatologists of the world, and he must be judged by his peers, not by an ignorant reviewer in a JOURNAL devoted to general medicine. One may at least express the sincere wish that the judgement will be favourable, and that such enormous industry and erudition will receive its reward.

The author is on less sure ground when he leaves the microscopic field, and attempts to enact a drama by which the appearance of the living tissue shall be revealed, as few pathologists are sufficiently imaginative to suppose themselves "transformed into a red cell" (page 159). This less solid writing might well be left to those who find it convenient, from lack of knowledge, to take refuge in the picturesque.

Professor Gruner's authority is so great and the publication of his book is such an important event that the occasion may be further utilized for offering some general observations upon a certain tendency in medicine, for which the title of the second work at the head of this notice will serve as an additional text.

Books which deal with the more technical parts of medicine are no longer written in English. The writers employ a jargon which they seem to manufacture as they go along. It sounds like Greek, but it is no more Greek than the dog-Latin of the "Introductorium" or of the "Thesaurus Pauperum" and other mediæval formularies is Latin. A reader who stops to ask himself the meaning of the words he is looking at will find himself bewildered. A scholarship which will help him through the less grammatical parts of a speech in Thucydides or the more corrupt parts of a chorus in Euripides will leave him helpless when he is face to face with the produce of the modern laboratory and the modern printing-press. This vice of using symbols to indicate ideas, without taking the trouble to express them, is not confined to medicine. It has even infected mathematics, in which a secondary set of symbols

has been invented to replace the familiar formulæ of our childhood, which were themselves merely symbols of a deeper meaning. In mathematics the comparatively specific Cartesian notation is being replaced by the vector. For example, the intelligible formula, $\int (lX + mY + nZ)ds$, becomes merely $\int \mathbf{F} \cdot \mathbf{nds}$.

This simple illustration will serve to indicate the new nomenclature which has been devised for scientific medicine. It may really be likened to the employment of stenographic signs instead of the written word. It may be that modern medicine has become so erudite and so obscure that it can no longer be conveyed in the vulgar tongue, and that it is a kind of mathematics which appeals only to the elect. But it must be remembered that mathematics is for the mathematician, and that medicine is for human beings, and must come home to their very hearts and bosoms.

In medicine there is no place for obscurantism. The rôle of a hypothetical Martian, which Professor Gruner adapts from Huxley, in which the investigator is to employ parahuman methods is a mistaken one. Not even a philosopher can proceed one step beyond human experience; and when Professor Gruner aspires to "a standpoint as nearly extrahuman as possible," he betrays by the very words, "as possible," his agreement with this dogma. It is the common experience that a writer who employs obscurantist and bizarre methods of expression has not fully investigated the possibilities of human speech. He finds himself at a loss, and is liable to be checked even by unlearned persons to whom that medium is familiar. Professor Gruner on the title page puts forth his book "for the use of practitioners of medicine," and in the preface, "as a companion to any of the larger text-books of hæmatology." If "The Biology of the Blood-Cells" were merely a companion to a "book," there would be nothing to say. Let the "book" speak for itself. When it is offered to practitioners of medicine, it is open to a practitioner of medicine to offer an opinion upon the companionship which is proposed to him.

Professor Gruner himself recognizes this difficulty which the practitioner lies under in trying to inform himself upon the deeper parts of medicine. Most of the technical books can be read with the help of a medical dictionary; but a new medical dictionary is not published every day, and the author has very considerately appended a glossary of terms which covers more than thirty pages. No one, except Professor Ruttan, and a few of his confrères, reads a book on chemistry. Such a book is as unintelligible as a book on astrology to one who is not an astrologer, but

Professor Ruttan does not put forth a work on chemistry for the use of practitioners of medicine.

The publication of "The Biology of the Blood-Cells" marks the gulf which has opened between the laboratory and the bedside, between the professor and the student, between the investigator and the physician; and the occasion is seized to demonstrate the tendency of which this book gives proof. This tendency is even more obvious in Professor Gruner's "Code System for the Hospital Pathological Laboratory." The author puts it forward frankly as a code, "just as business houses have devised codes by means of which they are enabled to transmit long cable messages in the form of only one or two arbitrary words." The analogy is not convincing. The cable imposes its own limitations. "The repeated employment of set phrases in a set order," is the very bane of the student. Most of all, we dissent from the dictum that "making records in telegraphic form ensures the very best training of all the faculties." A clerk in a telegraph office is not of all men the most completely educated. To Professor Gruner anything but "curt phraseology" is "verbiage." If many of his own expressions are curt phraseology, then we may well plead for a more liberal use of choicer words. Literary style is not like a livery which one buys for any servant he may secure to put into it: it is of the very essence of the man himself, and no formulæ will take its place.

For after all time cannot be so precious in a laboratory or anywhere else, as this code-book would lead us to imagine. "Slow tedious work" is not bad for a student, and this elaborate machinery is like an incubator for hatching eggs, so that the hen's time may be saved. A period of brooding is good for hens and for students too. The education of a medical student differs somewhat from the training of a seal. He may be taught to say "sixty-three," to indicate that "the gall-bladder contains viscid bile;" but ideas are inseparable from words, and they are clarified by the attempt to formulate them. This, in turn, leads to expression, in literary form, not for the sake of the form, but because ideas cannot be adequately expressed without it. These books of Professor Gruner are selected to illustrate the mechanical in modern medicine, because they lend themselves so readily, because one of them at least is so powerful, and because the author is a master-workman in the laboratory.

RESEARCHES ON RHEUMATISM. By F. J. POYNTON, M.D., and ALEXANDER PAINE, M.D., D.P.H. Illustrated. New York: The Macmillan Company, 1914. Toronto: The Macmillan Company of Canada, Limited.

This book is the outcome of a laudable attempt to bring to a focus English medicine in its relation to rheumatism. These results have been achieved by the bacteriologist and clinician working side by side, an important combination, since, as the authors say very prettily, the clinician serves to keep the bacteriologist sane, and the bacteriologist serves to keep the clinician honest. The present volume is the result of a study covering a period of fifteen years, and it will always be a landmark in English medicine no matter how much the interpretation of the facts may shift. Some of the papers were written before the authors had demonstrated what they believed to be the exciting cause of the disease; others elucidate the nature and action of that cause; and others, again, extend the main thesis and deal with allied conditions. At the conclusion of the volume the bearing of these investigations on clinical medicine and public health is considered in a special article. A volume of nearly five hundred pages dealing with one disease is bound to deal with it thoroughly, especially as the authors have confined themselves within the limits which they set for themselves. No finer piece of scientific work in medicine has appeared in recent years. It is almost infinite in detail, and yet the main lines of the investigation have not been obscured.

LECTURES ON THE NERVOUS AND CHEMICAL REGULATORS OF METABOLISM. By D. NOEL PATON, M.D., B.Sc. London: Macmillan & Company, 1913. Toronto: The Macmillan Company of Canada, Limited.

The object of these lectures is to consider the point which physiology has reached in determining the chemical regulation of metabolism, and the probable further significance of such observation. The chemical changes in protoplasm constitute its metabolism and are the origin of all vital phenomena. The question at issue is whether this chemical regulation acts directly upon the tissues or indirectly through the nervous system, whether, in short it is the older and more fundamental or developed later to facilitate nervous adjustment. It is this question which is considered in these lectures. There is a coördination and regulation which is exceedingly fine and the factors concerned in it are the theme of the

author. The problem of internal secretion lies at the basis of modern physiology ever since the investigations to Johannes Müller, and Berthold in 1849, and more especially since the time of Brown-Séquard. Professor Noel Paton approached this difficult subject boldly and with great skill, and his book is one of profound interest. At the moment no other question is of such vital importance in medicine, and in no other book is the presentation so adequate. It is not for the physiologist alone: it is for every member of the profession.

PRINCIPLES OF SURGERY. By W. A. Bryan, A.M., M.D., Professor of Surgery and Clinical Surgery at Vanderbilt University, Nashville, Tennessee. Octavo of 677 pages with 224 original illustrations. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$4.00 net. J. F. Hartz Co., Toronto.

Dr. Bryan observes very acutely that the principles of surgery are in reality common to all medical practice, and he adopts a very broad method of treatment. His book is really an introduction to the study of medicine. It includes much pathology and some physiology, and will prove very useful to a student who wishes for a general conspectus of the whole subject before he undertakes detailed studies in any one department. It is quite logical, and the statement is always succinct. No better book could be put in the hands of the intelligent student.

CLINICAL SURGICAL DIAGNOSIS FOR STUDENTS AND PRACTITIONERS. By F. DE QUERVAIN, Professor of Surgery and Director of the Surgical Clinic at the University of Basle. Illustrated. Translated from the fourth edition by J. SNOWMAN, M.D. London: John Bale, Sons & Danielsson, Limited, 1913. Toronto: The Macmillan Company of Canada, Limited.

This book is the outcome of rare experience and a powerful mind. It does not suffer by translation. Indeed it has a style of its own, strong and sinewy, which makes the reading of it a pleasure. The author in the process of diagnosis adheres to the plan of beginning with the symptoms which caused the patient to seek advice, rather than of deducing symptoms from a provisional or preconceived theory of their cause. Again, he insists that a diagnosis is not to be made for its own sake but as a means to a cure, and that the favourable moment must be seized for the operation

even if some minor considerations are left in abeyance. The safety of the patient is his first law, or at least, *primum nil nocere*. Cases are cited continually for the sake of illustration, and they are always illuminating. The figures are numerous and always bear directly on the text. As one reads the book one gains the impression of following a great teacher from patient to patient. This is one of the books which the publisher would be quite safe in sending out on the terms advertised, namely, that if the practitioner does not like it he may send it back.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By JAMES M. ANDERS, M.D., Professor of Medicine and Clinical Medicine. Medico-Chirurgical College, Philadelphia. Eleventh edition thoroughly revised. Octavo of 1,335 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$5.50 net; half morocco, \$7.00 net.

Everyone knows "Anders Practice of Medicine." For more than fifteen years the present writer has at various times been calling attention to it, and the book is now in its eleventh edition. One would say that the note of the book is the prominence given to treatment and the tabulation of differential diagnoses. It is always modern; it contains the newest teaching in diagnosis and treatment; it yields to every test that can be applied, and even a casual examination will disclose the reasons for the wide favour which it has enjoyed.

A TREATISE ON DISEASES OF THE SKIN. FOR THE USE OF ADVANCED STUDENTS AND PRACTITIONERS. By HENRY W. STELWAGON, M.D., Ph.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Seventh edition, thoroughly revised. Octavo of 1,250 pages with 334 text-illustrations and 33 full-page coloured and half-tone plates. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$6.00 net; half morocco, \$7.50 net. W. B. Saunders Company, Philadelphia. The J. F. Hartz Co., Limited, Toronto, Ontario.

One approaches this book with great respect. It appeared for the first time in 1902, and has now reached the seventh edition. As compared with the original this is really a new book, and even since 1910 the changes are considerable. Indeed the book has been re-written and the type re-set. The advance in knowledge

of diseases of the skin in the past two years, especially of syphilis, leprosy, pellagra, ringworm, and of tropical affections, left no other course open. Forty new cuts have been added, but by the omission of material which has become more or less obsolete the bulk of the book is not much increased. The illustrations are very beautiful and the whole work is a great credit to American medicine.

PRACTICAL SANITATION. A HANDBOOK FOR HEALTH OFFICERS AND PRACTITIONERS OF MEDICINE. By FLETCHER GARDNER, M.D. and JAMES PERSONS SIMONDS, B.A., M.D. Illustrated. Price, \$4.00. St. Louis: The C. V. Mosby Company, 1914.

The merit of this book lies in the careful consideration which it gives to quarantine, the examination of school children, the duties of health officers, and the management of campaigns for the extermination of vermin and insects which may be carriers of disease. It is written in plain terms; it will prove valuable to health officers, and physicians, and to all who are working for a higher standard of private and public hygiene.

STATE BOARD QUESTIONS AND ANSWERS. By R. MAX GOEPP, M.D., Professor of Clinical Medicine at the Philadelphia Polyclinic. Third edition thoroughly revised. Octavo volume of 717 pages. Philadelphia and London: W. B. Saunders, 1913. Cloth, \$4.00 net; half morocco, \$5.50 net. W. B. Saunders Company, Philadelphia and London. Sole Canadian Agents: The J. F. Hartz Co., Limited, Toronto.

This book is not, as one might suppose from the title, a mere collection of questions propounded by examiners in the various states. The author has collected, sifted, and arranged. Some questions have been omitted and others recast, namely, those which were the outcome of "the pernicious and pedantic practice . . . of mystifying the student by employing obsolete or unfamiliar terms . . . or of framing a question in such a way as to mislead the candidate." Accordingly, what might have been a book of humour has been converted into a work of utility. The questions cover a period of four years, and have appended to them the author's conception of the correct replies. The whole field of medicine is dealt with, and the student will find the book a ready compendium of knowledge and a means of testing his equipment for passing examinations.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

ESSENTIALS OF NERVOUS DISEASES AND INSANITY. By JOHN C. SHAW, M.D. Fifth edition, thoroughly revised by LOUIS CASAMAJOR, M.D. Illustrated. Price, cloth, \$41.00 net. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: the J. F. Hartz Company, Limited., Toronto.

A TREATISE ON DISEASES OF THE SKIN. FOR THE USE OF ADVANCED STUDENTS AND PRACTITIONERS. By HENRY W. STELWAGON, M.D., Ph.D. Seventh edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders Company, 1913. Canadian Agents: the J. F. Hartz Company, Limited, Toronto.

THE INTERVERTEBRAL FORAMEN. AN ATLAS AND HISTOLOGIC DESCRIPTION OF AN INTERVERTEBRAL FORAMEN AND ITS ADJACENT PARTS. By HAROLD SWANBERG. With an Introductory note by PROFESSOR HARRIS E. SANTEE. Illustrated. Chicago: Chicago Scientific Publishing Company, 1914.

PRACTICAL PATHOLOGY INCLUDING MORBID ANATOMY AND POST-MORTEM TECHNIQUE. By JAMES MILLER, M.D., D.Sc., F.R.C.P.E. London: Adam & Charles Black, 1914. Toronto: The Macmillan Company of Canada, Limited.

GERIATRICS. THE DISEASES OF OLD AGE AND THEIR TREATMENT INCLUDING PHYSIOLOGICAL OLD AGE, HOME AND INSTITUTIONAL CARE, AND MEDICO-LEGAL RELATIONS. By I. L. NASCHER, M.D., with an introduction by A. JACOBI, M.D. Illustrated. Price, \$5.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.

- A CODE SYSTEM FOR THE HOSPITAL PATHOLOGICAL LABORATORY. PART I, AUTOPSY WORK, BEING A STUDENT'S GUIDE TO THE DESCRIPTION OF AUTOPSY ORGANS. By O. C. GRUNER, M.D. Price, 65 cents. Montreal: Miss Poole's Bookroom.
- A COURSE OF LECTURES ON MEDICINE TO NURSES. By HERBERT E. CUFF, M.D., F.R.C.S. Sixth edition. Toronto: The Macmillan Company of Canada, Limited, 1914.
- ILLUSTRATED CATALOGUE OF PUBLICATIONS OF THE W. B. SAUNDERS COMPANY. A descriptive catalogue of 88 pages, describing some 250 books, including 30 new books and new editions. Philadelphia and London: The W. B. Saunders Company.
- TRANSACTIONS OF THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS, Volume VIII, 1913. New York: F. H. Hitchcock.
- THE BRADSHAW LECTURE ON THE BIOLOGY OF TUMOURS. By C. MANSELL MOULLIN, M.A., M.D., F.R.C.S. Published by request of the Council of the Royal College of Surgeons of England. Price, 2s. net. London: H. L. Lewis, 1913.
- MODERN MEDICINE, ITS THEORY AND PRACTICE, IN ORIGINAL CONTRIBUTIONS BY AMERICAN AND FOREIGN AUTHORS. Edited by SIR WILLIAM OSLER, Bart., M.D., F.R.S. and THOMAS McCRAE, M.D. Volume II, DISEASES CAUSED BY PROTOZOA AND ANIMAL PARASITES—DISEASES DUE TO PHYSICAL, CHEMICAL, AND ORGANIC AGENTS—DISEASES OF METABOLISM AND OF THE RESPIRATORY SYSTEM. Second edition, thoroughly revised. Illustrated. Price per volume, cloth, \$5.00 net; half morocco, \$7.00 net. Philadelphia and New York: Lea & Febiger, 1914.
- IMMUNITY. METHODS OF DIAGNOSIS AND THERAPY AND THEIR PRACTICAL APPLICATION. By DR. JULIUS CITRON, of Berlin. Translated from the German and edited by A. L. GARBAT, M.D. Second edition, revised and enlarged; illustrated. Price, \$3.50 net. Philadelphia: P. Blakiston's Son & Company, 1914.

Res Judicata

CHLORIDE AND UREA RETENTION IN NEPHRITIS

THE classification of nephritis based on the post-mortem findings is one which has generally been accepted by the different schools of medicine, and yet by all has been recognized as unsatisfactory. Other classifications, dependent on the duration of the disease, the intensity of the infecting or toxic agent, the predominance of the lesion in one part or another of the kidney, have been advanced, and have for a time held sway, but in their turn have led to confusion. This confusion owes its origin to the wide-spread invasion of the kidney, whatever may have been the duration of the disease—acute, sub-acute or chronic; and to the non-specificity of the causative agent—whether the etiological factor be scarlet fever, lead or gout, the glomerulitis, the tubulitis and the sclerosis will be the same.

Out of this chaos has arisen a classification, modern in its conception, simple in its interpretation, and practical in its application. It is now generally recognized that the advance in our knowledge of medicine has been of late, and must continue to be, the result of physiological and chemico-physiological investigations, and the French school, more than all others, has realized this. The Parisian workers, with Widal pre-eminent among them, have established on a physiological basis a classification which divides nephritis into two great groups; to the one with retention of chlorides is given the name *chlorurémie*, to the other with retention of urea is given the name *azotémie*. It is the purpose of this article to give a short review of the principles on which this classification is based, and in addition to describe briefly the symptoms and treatment of those cases of nephritis showing a retention of chlorides and urea.

The human organism is bathed in a 9 to 1,000 solution of sodium chloride; each cell is surrounded by and every fluid contains this substance in this proportion. By a process of osmosis, so long as there is life, there is a constant interchange of these molecules between the tissues and the fluids of the body. In this way the organism remains in an isotonic state, and equilibrium is maintained. Since sodium chloride is not manufactured within, it must come

from without the human body, Man requires 1.50 gm. of sodium chloride, and he obtains it in an average mixed diet, that is, one with a caloric value of 2,500. We are far removed from the simple unicellular organism which bathes in a saline solution; we have accustomed ourselves to take ten to fifteen grammes of salt every twenty-four hours, an amount far in excess of the amount required. The output must equal the excessive intake, otherwise there will be stored up in the body more than is required by it. The kidneys every twenty-four hours excrete ten to fifteen grammes of sodium chloride, and so the equilibrium is preserved. If for any reason the kidneys offer a barrier to the excretion of sodium chloride, the intake will exceed the output and equilibrium will be disturbed. The law of osmosis asserts itself, there is a greater call for water than the fluids may remain isotonic, and water is retained. In nephritis, the kidneys may offer a hindrance to the passage of sodium chloride through them; sodium chloride is stored up in the organism, there is a retention of fluids, and œdema results. A certain quantity of sodium chloride is not fixed by the water, so that it is possible to have a retention of chlorides without œdema. There is first a deep, sometimes visceral, œdema and hydræmia, what may be termed latent œdema; later a visible œdema, or œdema of the subcutaneous tissues. Rice has devised a refractometer, simple in its application, by which one may estimate exactly the degree of dilution of the blood. With the change in the refraction of the blood there is a corresponding increase in the body weight. We are thus enabled to measure the quantity of fluid retained in the blood before there is any external evidence of such retention.

The symptoms attributable to this retention of fluid depend upon its situation and its degrees. It may be slight, sometimes it is localized, but oftener there is a generalized œdema. Œdema of the viscera gives rise to symptoms referable to the organ involved. Œdema of the gastro-intestinal tract may occasion vomiting and diarrhœa, with increase of sodium chloride in the stomach contents and stools; œdema of the kidneys may explain in part the albuminuria, a pleural effusion may be sufficient to cause respiratory distress. Cerebral œdema can give rise to manifold signs and symptoms—headaches, palsies and convulsions from increased intracranial pressure, disturbances of vision from pressure on the sinus. Œdema of the larynx, with inspiratory dyspnœa, of the lungs, of the head, and of different segments of the body, these localized œdemas are not so common, yet are frequently seen in large clinics.

Just as œdema advances in different stages, so it recedes, only

in the reverse order. How may this recession be brought about? Many methods have been adopted, and perhaps the one most generally in use has for its object the increased elimination of the retained fluids by sweating and purging. If you draw off the water you leave behind the salt, and more water is required to satisfy it. The success which this treatment has obtained is probably due to the diet which goes with it. The rational treatment is one which removes the cause, namely the stored up chlorides; and this we have, when properly carried out, in a salt-free diet. Place the patient on a salt-free, mixed diet, weigh him each day, and estimate the sodium chloride in each twenty-four hour specimen of urine. The œdema will disappear, first the visible, later the latent œdema; there will be a decrease in body weight corresponding to the quantity of retained fluid lost, and a parallel increase in the chlorides in the urine. When the œdema has completely disappeared, the weight will remain the same, and the chlorides will equal the intake, namely 1.50 grammes. If now 3 grammes of sodium salt, divided in gramme packages, are added to the diet, and the same measures are continued—daily weighing of the patient and estimation of the chlorides—the toleration of the kidneys for this increased intake of sodium chloride may be ascertained. If the kidneys can tolerate these added 3 grammes, the weight of the patient should remain the same, and there should be in the urine 3 grammes, plus 1.50 grammes, which is always in the food. In a few days there should be an increase in body weight due to assimilation of the food and not to retained fluids. If it is found that 3 grammes are tolerated, 5 grammes may be tried; and if this succeeds, the patient may be discharged on a full salt diet. As a rule, these nephritics cannot tolerate more than 5 grammes, and they are sent out on a restricted salt diet. The kidneys on the other hand may be so impermeable to chlorides, that the œdema disappears slowly or not completely. A diuretic—and theobromine given in half-gramme doses three times daily is by far the best—may assist the passage of the sodium chloride through the kidney cells. Some cases will not react to this treatment, because the kidneys are so badly damaged that they offer an impermeable barrier to sodium chloride.

Urea has long been known to be retained in the blood, and this retention has generally been associated with renal disease. Investigators everywhere have sought an explanation of certain symptoms in nephritis in this retention of urea; it has, however, not yet been established that the accumulation of urea in the body is a factor in

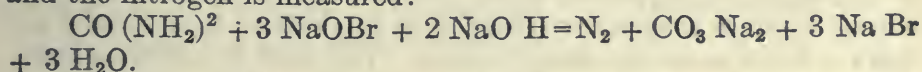
the production of these symptoms. Widal has found that there are a large number of nephritics with a retention of urea who present symptoms which cannot be ascribed to chloride retention with oedema, or to hypertension; to this group he has given the name *azotémie*.

Achard, in 1900, in order to determine the permeability of the kidney, injected a known quantity of methylene blue into a series of cases, and then noted the time taken by the kidneys to excrete this substance. He found that in nephritics as compared with normal subjects, there was a delay in the elimination of the methylene blue. If, instead of a simple injection, several on successive days were given, the colouring matter appeared in the normal subject in increasing amounts in the urine, followed by a rapid diminution after the last injection. In those cases with nephritis, on the other hand, the increase was much more gradual, and continued past the day on which the last injection was given, showing that there was retention of methylene blue in the organism. A few years later parallel results were obtained when pure urea was given along with the methylene blue, showing that the elimination of these two substances had taken place in the same manner. These experiments also showed the futility of estimating the urea in the urine alone, for in a case with retention of urea, the output was greater than the intake. At this time Widal found that those cases with a retention of urea, if they were placed on a diet rich in nitrogen, could excrete a large quantity of urea, and he proposed as a measure of this retention the ratio of the nitrogen ingested to that in the blood. With these investigations there is a fallacy, since a true measure of the kidney function depends on the amount of urea which the kidney receives, and the time in which it receives and excretes it. The use of a foreign body such as methylene blue also offers a difficulty, since it is not a true index of the secretory power of the kidney. We know that the sclerosed kidney delays the elimination of this substance, but the large white kidney hastens it; also the kidney has the property of dissociation, different substances being eliminated at different times, and in different quantities.

In 1911 Ambard formulated certain laws which depend on the existence of a mathematical relationship between the quantity of urea in the blood and urine; thus when the kidney debits urea at a fixed concentration (by "debit" is meant the output of urea per twenty-four hours as calculated from the output over a short period), the debit varies in direct proportion to the square of the concentra-

tion of the urea in the blood. The quotient of the urea of the blood divided by the square root of the urinary debit should be a constant figure. In those cases of nephritis with retention, the constant is higher than that of a normal subject. This method is undoubtedly a more accurate determination of the kidney function, and it does not depend upon a fixed regime as does the method of Widal, which compares the quantity of nitrogen ingested with that found in the blood. Normally there is present in the blood .3 to .5 grammes of urea per litre. In a normal subject on an ordinary mixed diet, the urea in the blood will not vary much beyond these limits. Those cases showing any considerable retention of urea show also a corresponding elevation of the constant of Ambard. Only in border-line cases, that is, when the urea in the blood is .5 gramme or slightly more, is there any discrepancy between the quantity of urea in the blood and the constant of Ambard. For practical purposes the simple estimation of urea in the blood is a sufficiently accurate method of determining the permeability of the kidneys for urea, and an exact means of estimating their functional power. The mechanism of this retention is a regulating one. The diseased kidney offers a barrier to the excretion of urea, and this substance, easily diffusible because of the smallness of its molecules, accumulates in the body without disturbing the isotonic state of the body fluids. The urea, circulating in the blood in increased quantity, is more able to overcome the barrier which the kidneys offer, and is consequently more easily excreted.

If this method of determining the permeability of the kidneys is to be of practical value, it is essential that the technique be a simple one. This we have in a method introduced by Moog and modified by Ambard, and now used as a routine measure in the large clinics in Paris. It depends on the property which sodium hypobromite has of decomposing urea, which by its oxidation liberates carbonic acid and nitrogen; sodium carbonate is formed, and the nitrogen is measured:



The 20 cc. of blood required is obtained by puncturing one of the veins of the arm. An equal quantity of a 20 per cent. solution of trichloroacetic acid is added. A brown precipitate is formed, due to the albumin of the blood which the acid has precipitated. This solution is filtered, and the exact amount of the filtrate is noted. The filtrate is neutralized with a 10 per cent. sodium hydrate solution, using phenolphthalein as an indicator.

This rose pink solution is poured into an Yvon ureometer with a rubber bulb closing the lower end. Distilled water is added, until on pressure of the bulb all the air is expelled. About 5 cc. of sodium hypobromite is added, the nitrogen collects at the top of the tube; the bulb is removed under water, and a reading is made in centimetres of nitrogen. This reading is corrected for temperature and atmospheric pressure, and is converted into urea, the result being expressed in grammes per litre. This method is used in the wards of the Montreal General Hospital; it is simple and exact, requires about ten minutes, and may be easily adopted by the general practitioner.

Of the symptoms associated with a retention of urea, those referable to the nervous system are the most apparent manifestation of toxins retained in the body. This disturbance of the nervous system is seen first in a diminished physical and mental activity, later in drowsiness and torpor, and finally in coma. Disturbances of digestion play an important rôle in this group of symptoms; they manifest themselves in a variety of ways, and may involve a part or the whole of the gastro-intestinal tract. Loss of appetite, particularly for meat, may be a reflex mechanism developed by the body to protect itself from nitrogenous substances with which it is overloaded. Vomiting and diarrhoea may be a further effort to get rid of urea accumulated in the body. Ulceration with hæmorrhage of the gums, pharynx, stomach, and intestines is a result of the vicarious excretion of urea. Pruritis is not uncommon; an intolerable itching which resembles in this respect that seen in severe cases of icterus and diabetes. It is difficult to explain this by an increased excretion of urea by the skin, since cases with such secretion (a rare event) may not have pruritis. Anæmia of all degrees, and with corresponding changes in the morphology of the red blood cells, is quite apart from that seen in nephritis with retention of chlorides and consequent hydræmia. It is usually accompanied by a leucocytosis. Pericarditis in nephritis is not common, but is always associated with a retention of urea, and for this reason is a serious complication. The fluid is usually sterile, though the pneumococcus may be present. Retinitis has always been looked upon as a grave prognostic sign in nephritis, and this is easily understood, since it is always associated with urea retention. The reverse, however, is not true; there may be a considerable retention, and yet no changes may be found in the fundi.

The estimation of urea in the blood is essentially a method of determining the prognosis, while the determination of the

toleration of the kidneys for chlorides is on the other hand a therapeutic measure. Urea retention is usually associated with chronic interstitial changes in the kidneys. These may have been present from the first, or may have been preceded by acute parenchymatous nephritis with chloride retention. Throughout the whole course of the disease there may be no chloride retention, and no œdema; these are the pure urea retention cases. More commonly, however, there is a history of an acute nephritis with chloride retention; and later with the disappearance of these symptoms there develops a retention of urea. We may then, in these mixed cases, look upon the retention of urea as a complication of the chloride retention. Acute retention of urea with a rapid return to the normal is not common; it is most frequently seen in the toxic nephritis of pregnancy.

The prognosis is based on the degree of retention. Normally there is present in the blood .3 to .5 grammes per litre; any amount over these figures must be considered as pathological. Those cases having urea in quantities varying from .5 to 1 gramme are spoken of as urea retention cases (*azotémiques*) of the first degree. It is possible in these cases by diminishing the proteid intake to bring the urea within normal limits. The prognosis should, however, be reserved, since the kidneys show considerable damage. Cases of the second degree have 1 to 2 grammes of urea, and rarely live longer than a year; those of the third degree have 2 to 3 grammes, and live but a few months; those of the fourth degree, with 3 grammes or more, are moribund.

Two other syndromes may be, and usually are, associated with chloride and urea retention—albuminuria and hypertension. Of these, hypertension is by far the more important; it gives rise to other symptoms than those already described. Of albuminuria but a word need be said—it is an index of kidney disease, and a most untrustworthy sign.

THOS. F. COTTON.

S. SCHMITTER, Manila, P.I. (*Journal A.M.A.*, February 21st), reports a case of rabies in a large monkey just caught from the forest. Other observers have noticed the existence of the disease in dogs in the Philippines and this would seem to indicate that it is endemic, even among the wild animals. In the case reported the diagnosis was made certain by the finding of negri bodies in the brain and by inoculation of a rabbit with similar findings.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

EXAMINATION OF STOMACH CONTENTS WITHOUT THE STOMACH TUBE. BY DR. FRIEDRICH, of Berlin. *Archiv fur Verdauungskrankheiten*. Band 19, Heft 5.

THE author frequently examines stomach contents without the aid of the stomach tube by using a capsule attached to a cord that has been soaked in Congo red. The capsule is swallowed by the patient and the attached cord thus drawn into the stomach. After some minutes the apparatus is withdrawn and by the change of colour of the cord one can ascertain the amount of free hydrochloric acid present. Irregular changes of colour indicate gastric catarrh; a red shade at the distal end only signifies hypermotility. The apparatus is useful in cases where the stomach tube cannot be employed.

THE MESOTHORIUM TREATMENT OF CARCINOMA UTERI. BY PROFESSOR A. DODERLEIN, of Munich. *Muenchener Medizinische Wochenschrift*, No. 51, 1913.

In order to give the Bavarian Gynæcological Society an opportunity of criticizing his results with mesothorium the author recently assembled two dozen treated cases for examination by his confrères. In all there have been one hundred and fifty-two cases of carcinoma uteri treated in the clinic with mesothorium, and the author's experiences have made him resolved never again to operate on a case of this nature. Of these one hundred and fifty-two cases twenty-six have since died. Of fifty cases treated during the first part of the year (1913) sixteen have been discharged, although the author does not claim they are cured, as five years must first elapse; twelve are still under treatment; in one case the treatment has been given up; of three no news can be obtained; eighteen have died. Some very characteristic cases were presented before the society: absolutely inoperable cases which, after one or two treatments at the beginning of the year, were now considered anatomically cured. Some cases showed scar tissue contraction of the upper vagina, others so healed that it was hard to believe that

carcinoma had once been present. Concerning the technique the most important point is the filtering of the rays. It has been shown that the previously used soft metals, like lead, have very strong secondary rays, and that it is these secondary rays that cause burns. Screens of nickle-plated brass have proved the most satisfactory substitute. Any rubber goods used about the patient during treatment must be free from sulphur, and iodoform gauze must not be used as a tamponade. There is no great difference between the action of radium, mesothorium and Roentgen rays. The examination of the twenty-four cases mentioned above during the meeting of the society convinced all present of the favourable results of the mesothorium treatment.

A REMARKABLE CASE OF RUMINATION IN THE HUMAN. BY DR. V. GULAT-WELLENBURG, of Munich. *Muenchener Medizinische Wochenschrift*, No. 46, 1913.

The author describes the case of a man coming under his observation who exhibited rumination to a marked degree, and in fact made his living by this extraordinary faculty. He was sixty-three years of age, healthy-looking, and with no stigmata of hysteria. As a child he would regurgitate his milk and his mouth had to be tied up after feeding. He stated that after a heavy meal he always suffered from a feeling of fulness which was relieved by rumination, although the latter could be suppressed when necessary. The regurgitated food tasted, he said, just the same as when he first took it into his mouth. He has been accustomed to make his living by exhibiting his peculiarity. He would swallow live frogs and fish and produce them still living after some minutes. He could drink four litres of water at a draught. While under observation by the author the patient swallowed blotting paper, dead frogs, condoms and surgeons gloves, all of which had first been impregnated with barium sulphate, and these were then demonstrated by the x -rays to be in the stomach, not in a dilated part of the œsophagus as is often the case with ruminants. The ingested articles were then returned to their owners. A test meal being given, the patient brought it up by rumination after fifty minutes for testing. There had been very little digestion. There was very little gastric juice present and only a trace of hydrochloric acid; total acidity was fifty. The author remarks that the patient would probably find the calling of a professional thief much more remunerative and without danger of detection.

THE ALCOHOL CONTENT OF THE BLOOD. BY W. SCHWEISHEIMER, of Munich. *Deutsches Archiv fur Klinische Medizin.*

Ethyl alcohol is present in the normal blood, on the average, in the amount of '02955 per thousand, depending on the amount of carbohydrate fermentation in the intestines. Ingested alcohol is passed on as such to the blood stream. There is a considerable amount of alcohol, as much as 2'226 per thousand, in the blood of an intoxicated person. If an abstemious man and an habitually heavy drinker imbibe the same amount of alcohol there is a considerable difference in the amount of alcohol to be found in their respective blood streams. In the case of the man unaccustomed to liquor there is a higher concentration of alcohol in the blood than in that of the habitual drinker. In the former the greatest alcohol content of the blood is found in one and one half to two hours and the amount slowly diminishes; in the latter the highest point of alcohol content is quickly reached and the amount as quickly falls. The psychic influence of ingested alcohol, that is the symptoms of intoxication, correspond to the rise and fall of the alcohol content of the blood. The hypersensibility of epileptics to alcohol is due to its more rapid passage to the blood than is usual in normal persons. A differential diagnosis can be made in the case of an unconscious person as to whether he is intoxicated or not; whether he has been drinking at all, and if so approximately what amount he has consumed.

London, Ontario.

G. C. HALE.

R. S. BARTON and H. A. Coleman, New Philadelphia, Ohio, (*Journal A.M.A.*, February 21st), report the case of a child three years old that had swallowed an open, small-sized safety-pin. The radiogram showed it in the region of the stomach. The child would neither eat or drink on account of soreness and vomited everything it swallowed. Forty-four hours later, after the passage of a No. 26 catheter into the stomach, she ate ravenously and without further trouble. The first bowel movement occurred nineteen hours later and with it the open pin was passed in a large scybalum.

Obituary

DR. EVANS, of Toronto, died suddenly on February 11th at Eganville. Dr. Evans had been practising for some months at Barry's Bay. Death was due to heart failure.

DR. H. JEANNOTTE, of Montreal, died February 27th, at the age of sixty-five. Dr. Jeannotte was born at St. Marc and was educated at Montreal, where he has practised since 1877. He leaves a widow, four sons and three daughters.

DR. WILLIAM CALDWELL, of Peterborough, Ontario, died February 8th, in the seventy-fifth year of his age. Dr. Caldwell was born in Huntingdon, Que. He was educated at Norwich, Ontario, and before taking up the study of medicine devoted some time to the profession of teaching. He graduated from McGill University, afterwards studying in London and in New York, where he specialized in the eye, ear, and nose. Dr. Caldwell first went into practice at Lakefield. After practising there for ten years, he went to Peterborough where the last twenty-five years of his life were spent. He was a well-known member of the profession and for many years was physician at the Peterborough County goal.

DR. MOHER, of Cobourg, died February 23rd. Dr. Moher was born at Peterborough in 1862. After graduation he went into practice at Trenton and at Peterborough. Later he accepted a position at the Orillia Asylum: from there he went to the asylum at Brockville, where he was medical superintendent for six years; and for the past three years he has held a similar post at the Cobourg Hospital for the Insane. He is survived by his widow and one son.

DR. G. H. W. RYAN, of Vermillion, Alberta, died February 21st. Dr. Ryan was the son of the Rev. W. W. Ryan and was born at Milford, Ontario, February 11th, 1874. After graduating from McGill University, he went into practice for a few years at Milbridge, Maine. In 1905 he went to Vermillion where he had a large practice. Dr. Ryan filled many public offices and at the time of his

death was mayor of Vermillion. He was greatly esteemed and his death is much regretted. He leaves a widow and one daughter.

DR. J. J. BROWN, of Owen Sound, Ontario, died February 24th, in the fifty-fourth year of his age. Dr. Brown was a graduate of Toronto. He was an invalid for some time before his death.

DR. J. O. STEWART, of Montreal, died February 20th. Dr. Stewart graduated from McGill in 1880. He practised at Cazaville, Quebec, for many years. He leaves a widow and two sons.

DR. GEORGE HARRISON, of Clifford, Ontario, died March 7th. Dr. Harrison was born in the village of Selkirk, County of Haldimand. Before entering upon the study of medicine, he taught in Dunnville for about four years. He then went to Trinity and afterwards to Victoria College, from which he graduated in 1890. After a year's work at the Toronto General Hospital, Dr. Harrison went into practise at Belmore, but removed to Clifford about eighteen years ago. He leaves a widow and three daughters.

DR. WALTER CARTIER, of Coteau Station, Quebec, died at Montreal, January 28th.

DR. J. LANCTOT, of Montreal, died February 20th, in the sixty-ninth year of his age. Dr. Lanctôt represented the province of Quebec at the French Medical Association Congress eighteen months ago; on his way home he was taken ill at London, and has since then been an invalid.

DR. H. JEANNE, of Montreal, died in the sixtieth year of his age. Dr. Jeanne was editor of *Le Concours Médical*.

THE American Association of Pathologists and Bacteriologists meets in the Pathological Department, University of Toronto, on Friday and Saturday April 10th and 11th under the presidency of Prof. J. J. MacKenzie. On Thursday, April 9th, the American Association for Cancer Research of the Association of Medical Museums will also meet.

News

MARITIME PROVINCES

THE report of the Nova Scotia Hospital for the Insane for the year 1913 gives the following information. Number admitted, 184; number in hospital at beginning of year, 457; number discharged, 150; number of deaths, 37, of which 10 were due to pulmonary tuberculosis. Of the patients discharged, 67 were considered to be restored to their normal condition, 37 were improved, and 47 were unimproved; of the latter 39 were transferred to county asylums, 6 were taken charge of by friends, and 2 were deported. The average daily cost of treatment for each patient was \$2.34, a little less than during the previous year.

THE question of establishing a municipal sanatorium at Halifax is to be brought up in the legislature this session. It is proposed that the city shall take over a sanatorium which now exists and that its management shall be vested in a board of trustees consisting of four members appointed by and from the city council, four citizens of Halifax, also appointed by the city council, and two members appointed by the provincial government, the board to possess power to appoint an executive and other sub-committees. It is proposed, in addition, that the present sanatorium site shall be acquired from the Dominion government as a permanent location for the municipal institution, and that the provincial government shall contribute \$2.00 for each patient treated and the deficiency be shared by the city council and the Anti-tuberculosis League, the city's share, however, not to exceed \$2,500.

A HOSPITAL is to be built at Newcastle, New Brunswick. A gift of \$30,000 has been made towards the building fund and the following annual grants have been promised: Northumberland County, \$1,000; the town of Newcastle, \$500; the Highland Society, \$250; and St. James' Presbyterian Church, Newcastle, \$100.

IN the annual report for 1913 of the Highland View Hospital at Amherst, Nova Scotia, it is stated that 407 patients were treated during the year, 241 operations were performed, and 20 deaths occurred.

THE official opening of the Jordan Memorial Sanatorium at River Glade, New Brunswick, will take place early next summer.

The institution has been open for the reception of patients since last April and the average number of patients in residence has been about twenty. The property was given by Mrs. Jordan, who has also spent a large sum of money on improvements and extensions to the building. An additional \$35,000 has been expended on the institution by the provincial government. The sanatorium now has accommodation for thirty patients and when the additions at present in progress are finished this capacity will be doubled. A bill has been introduced in the legislature to enable the work to be completed.

THE late Mr. Starr, of Litchfield, Connecticut, bequeathed half of his estate to the Prince Edward Island Hospital, on condition that the income on the money should go to a relative during her lifetime. A short time ago the relative in question died and the trustees of the hospital have now received the bequest.

ONTARIO

IN the hope of extending the system of medical inspection of public schools to the rural districts of the province, a delegation waited upon the Minister of Education on March 4th, last. The delegation consisted of the Superintendent of Education, Toronto, Dr. Harley Smith, Dr. Reeve, Dr. Hamilton, and Dr. Young. The Minister promised that the matter should receive consideration.

THE following cases of communicable disease were reported in the province during the month of February: smallpox, 60 cases; scarlet fever, 410 cases, 6 deaths; diphtheria, 216 cases, 10 deaths; measles, 427 cases, 3 deaths; whooping cough, 63 cases, 2 deaths; typhoid fever, 49 cases, 10 deaths; tuberculosis, 138 cases, 72 deaths; cerebrospinal meningitis, 7 cases, 7 deaths.

A SITE, consisting of fifteen acres on the top of the mountain, has been appropriated by the city of Hamilton for the new hospital.

AN addition to the Kingston General Hospital is in course of construction. The new wing will contain accommodation for forty patients.

THE contract has been awarded for the enlargement of the Guelph General Hospital. The cost of the proposed extension is

estimated at \$44,000 and of this amount \$28,000 is provided by the recent by-law.

MR. W. J. GAGE, of Toronto, has recently made a further contribution of one hundred thousand dollars to the National Sanitarium Association. The money will be expended in providing more accommodation for patients suffering from tuberculosis. The gift brings Mr. Gage's contributions up to a quarter of a million dollars.

AN isolation hospital is to be built at Chatham by the Daughters of the Empire.

During the past twelve months 622 patients were treated in the Stratford General Hospital. The cost of treatment is estimated at \$1.58 a day for each person. The financial statement shows a deficit of \$879.69.

AT a meeting of the Windsor Hospital Board, held March 3rd, it was decided to finish the annex to the hospital. In order to do this a further \$1,500 is required.

IT is proposed to establish a Jewish hospital in Toronto. The Hebrew Hospital Association has acquired a property on Murray Street at the price of ten thousand dollars. The property, which has a building upon it, measures forty-five feet in width and two hundred and seventy-five feet in depth. The building contains about eighteen rooms and will be used as a temporary hospital until the plans of the association are completed.

AN annual grant of \$30,000 has been made by the board of control to the Toronto General Hospital. At present there are 500 patients in the hospital; it contains accommodation for 700.

AN arrangement has been made by which the Burnside house, in the grounds of the old general hospital at Toronto, will be used as a temporary detention hospital for insane persons.

A NEW wing is to be added to the Chatham General Hospital. The addition will be built at the east side of the hospital and will

contain twenty rooms for patients. A nurses' home will not be built at present but the top floor of the new building will be reserved for their use until it is required for the accommodation of patients.

THE plans have been prepared for an addition to the McKellar General Hospital. The new wing will consist of three storeys with basement. The ground floor will contain private wards and a children's ward, the second floor will be devoted to private wards, and the third floor will contain a large public ward for male patients. Improvements are also to be made to the main building of the hospital.

A SANITARIUM is to be built at Free Port, between Galt and Berlin. The proposed building will accommodate twenty patients and provision will be made for the addition of cottages later on.

THE new private hospital of the Canadian Copper Company at Copper Cliff, Sudbury, is now finished. The former hospital was destroyed by fire in February, 1912. The cost of the new building has been about \$200,000. The medical superintendent is Dr. McAuley.

THE new hospital at Cobourg was formally opened on February 27th.

QUEBEC

DR. PARISEAU has been appointed medical officer of health of Sherbrooke at a salary of two thousand dollars a year. Owing to the prevalence of scarlet fever, the schools in the city have been closed for a short time.

THE forty-eighth annual meeting of the Jeffrey Hale's Hospital, Quebec, took place February 9th. During the year 1,124 patients received treatment at an average daily cost of \$1.76 a head. Two resident house surgeons have been appointed, Dr. H. McKinnon and Dr. J. F. MacIver.

THE contract has been awarded for the erection of the Quebec Isolation Hospital. The estimated cost is \$90,342. The building will consist of three storeys and will measure 110 feet by 30 feet.

A FIRE occurred at the Vincent de Paul Penitentiary at Montreal on the morning of February 26th. The hospital and chapel were destroyed and the surgical and drug department was much damaged.

THE Notre Dame Hospital at Montreal is to be enlarged. During the past twelve months 2,572 patients have received treatment there. The number of incurables discharged was 362. In the St. Paul Annex 1,314 patients were treated.

AN epidemic of paratyphoid is reported from various places in the neighbourhood of the Richelieu River. St. John's and Iberville are specially affected. Cases have been occurring since last December, but at first the disease was diagnosed as intestinal grippe. It is reported that out of a population of seven thousand in the county of Savrevois, two thousand persons have contracted the disease and that several deaths have occurred. The source of infection is thought to be the water from the Richelieu River.

NEARLY five thousand patients were treated in the Montreal General Hospital during the past twelve months. The hospital has been enlarged but the work is not yet completed and at least \$75,000 is needed before this can be done. The financial statement for the past year shows a deficit of \$67,014.

DR. J. R. DUTTON has been appointed superintendent of the Alexandra Hospital at Montreal. During February, 188 patients were admitted to this hospital. These admissions included 66 cases of scarlatina, in 5 of which death resulted; 18 cases of diphtheria, with 1 death; 1 case of measles; and 3 of erysipelas. The total number of deaths in hospital during the month was eleven.

A FOUR-STOREY quarantine hospital is to be erected at Grosse Isle by the Dominion government.

MANITOBA

AN outbreak of smallpox is reported from the Nut Lake Indian Reserve, forty miles north of Wadena. About twenty-nine cases are reported to be under treatment. +

A BILL has been passed by the provincial government, whereby the municipal grant to hospitals of \$1.00 a day for each indigent patient treated has been augmented to \$1.50. A bill has also been passed to empower the lieutenant-governor-in-council to guarantee bonds of the Winnipeg General Hospital to the extent of \$400,000 at a rate of interest not exceeding five per cent.

THE King George Isolation Hospital at Winnipeg is now finished and twenty-five patients were admitted on February 27th. At present only scarlet fever and diphtheria patients are admitted, but it is the intention to receive patients suffering from measles also in a short time. The hospital contains 176 beds and has been erected at a cost of \$400,000. The superintendent is Dr. A. B. Alexander, who also has charge of the King George Hospital for tuberculosis. The old tuberculosis hospital has been converted into a nurses' home.

ALBERTA

REGULATIONS have now been made by the provincial government whereby the municipality in which a patient has been resident for a continuous period of three months is made responsible for the maintenance of that patient, should he be unable to pay for himself. The new regulations also require that every hospital shall be equipped with a clinical laboratory, proper means for disinfection, and a mortuary. Each hospital shall contain accommodation for cases of acute delirium, and for cases of pulmonary tuberculosis unless there is a sanitarium for the treatment of such cases in the municipality, and shall be provided with at least two graduate nurses, one of whom shall be in charge of the operating room.

THE Regina General Hospital is being enlarged. It is hoped that the new wing will be finished by the beginning of next July. The work of the hospital has greatly increased during the past year, 1,976 patients having received treatment. The average cost for each day's treatment was \$2.39 per patient. One hundred and fourteen deaths occurred. In the isolation hospital 150 patients received treatment and 5 deaths took place.

THE next examinations for licence to practise medicine in

Alberta will commence on the 24th instant. The examinations are under the direction of the Senate of the University of Alberta, Edmonton, and are held twice yearly. Applications for the spring examinations should be sent to Cecil E. Race, Registrar of the University of Alberta, on or before April 1st, and for the autumn examinations on or before August 15th. The licence to practise is issued by the College of Physicians and Surgeons of Alberta, whose Registrar is Dr. George Macdonald, of Calgary.

At a meeting which took place February 27th, the members of the Edmonton Hospital Board were reelected.

SASKATCHEWAN

DURING the month of February only eighteen cases of infectious disease were reported in Saskatoon. This compares very favourably with 1913, when during the same month one hundred and four cases were reported.

THE Northern Saskatchewan Hospital for the Insane, at Battleford, is now completed. The asylum, which has cost about \$1,250,000, is beautifully situated and in addition to extensive grounds possesses a farm of two thousand acres. It has accommodation for 600 patients and a staff of 55 persons. The patients belonging to Saskatchewan were removed to Battleford from the Brandon asylum on February 4th, last.

THE Davidson and Arm Joint Municipal Hospital was opened February 11th. The hospital contains two public wards, each with accommodation for four patients, and four private rooms.

THE plans have been prepared for a hospital at Estevan.

THE Victoria Hospital at Renfrew has been enlarged. The Isolation Hospital is also finished and ready for occupation.

BRITISH COLUMBIA

A BILL was introduced recently into the legislature by Dr. Young to amend the provincial Royal Jubilee Hospital Act of 1890. The purpose of the amendment is to make it possible for members of the medical profession to sit on the board of this institution.

LAST year, 1,287 patients were admitted to the Royal Inland Hospital at Kamloops and 25,969 days of treatment were given at an average daily cost of \$1.95 per patient. These figures compare favourably with those of last year, when 1,100 patients were treated at an average per capita cost of \$2.07 a day.

A MEETING was held at Summerland on February 25th, to consider the possibility of establishing a hospital there. A resolution was passed in favour of its erection, provided the cost did not exceed six thousand dollars. A site has been offered by the Development Company and a grant of \$2,300 has been promised by the provincial government.

DR. BAPTY, of Victoria, has been appointed acting secretary to the provincial board of health on the retirement of Dr. Fagan.

It is probable that a hospital will be built at Nakusp.

The annual report of the Vancouver General Hospital for 1913 shows that during the year the days of treatment have increased 10 per cent. The expenses also have increased, the average daily cost of treatment per patient having been \$2.11 compared with \$1.98 during the previous twelve months. The growth of the hospital is shown by the fact that twelve years ago it contained 45 beds and had a staff of 29, whereas it now contains 415 beds and the staff numbers 205. The building is being enlarged and it is hoped that the work will be finished by the early autumn.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canadian Journal of Medicine and Surgery, March, 1914:

Hæmatomyelia J. Loudon.

Dominion Medical Monthly, March, 1914:

Foreign bodies in the air passages . . . Sir R. J. Godlee.
The treatment of the pneumonias . . . R. L. Wilson.

The Public Health Journal, February, 1914:

Medical Inspection of schools in Toronto .	W. E. Struthers.
The status of school dentistry	A. Irwin.
School nursing in Toronto	L. L. Rogers.
Medical inspection of schools in the middle West.	
Medical inspection of schools in Nova Scotia.	

The Western Medical News, February, 1914:

Kinks	E. A. Hall.
Some suggestions regarding the selection of a suitable sanatorium site	W. M. Hart.

L'Union Médicale du Canada, February, 1914:

Avantages économiques de l'hygiène publique	C. N. Valin.
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The Canada Lancet, February, 1914:

A few reflections—even a soliloquy . . .	J. S. Sprague.
Notes from China	E. A. Hall.
Prostatic hypertrophy: its treatment .	W. J. Macdonald.

Publication No. 8, issued by the Medical Faculty of Queen's University, January, 1914:

The man who discovered the circulation of the blood	D. Fraser Harris.
The influence of Italy on British life and thought	D. Fraser Harris.
Treatment of sciatica	James Third.
Acidosis and acid intoxication	W. T. Connell.
Note on salvarsan in the treatment of syphilis	W. T. Connell.

Le Bulletin Médical de Quebec, March, 1914:

Considérations sur le vaccin anti-vario-lique, sa préparation, son controle, sa conservation	A. Lavoie.
Le problème de l'habitation	E. Nadeau.

The Canadian Practitioner and Review, March, 1914:

On naked-eye changes in the kidney . . .	O. C. Gruner.
Infectious diseases of eight thousand Canadian children	H. W. Hill.
Bovine tuberculosis in relation to milk supply	F. Torrance.
Water supply, sewage disposal and housing problem among important works . . .	J. Antonisen.
The smoke problem	R. N. Blackburn.
Field work of an Ontario District Medical Officer of Health	R. E. Wodehouse.

Medical Societies

INTERNATIONAL SURGICAL ASSOCIATION

THE fourth congress of the International Surgical Association will be held at the Hotel Astor, New York, on the 13th, 14th, 15th, and 16th instant. The congress was first held in Brussels in 1905 and since then has taken place there once in every three years. This year a departure has been made and New York has been chosen for the meetings. Membership in the association is limited to a certain number from each country, that of the United States being about one hundred. The president of the fourth congress is Professor Depage, of Brussels; Professor Willems, of Ghent, is the president of the International Committee, and Dr. L. Mayer, of Brussels, is the general secretary. The local secretary is Dr. J. P. Hoguet, 40 East 41st Street, New York. The American Committee is composed of Dr. Roswell Park (deceased), of Buffalo, Dr. L. L. McArthur, of Chicago, Dr. C. L. Gibson, of New York, and Dr. R. H. Harte, of Philadelphia. These last three with Dr. Rudolf Matas, of New Orleans, and Dr. R. G. LeConte, of Philadelphia, constitute the committee designated to represent the American Surgical Association in making preparations for the entertainment of the foreign members.

The programme is limited to the consideration of three main topics.

Gastric and duodenal ulcers. Introduced by papers by De

Quervain of Basel, Hartmann of Paris, Lecène of Paris, Mayo of Rochester, Moynihan of Leeds, and Payr of Königsberg.

Grafts and transplantations. Introduced by papers by Morestin of Paris, Villard of Lyons, Ulmann of Vienna, Lexer of Jena, and Carrel of New York.

Amputations. Introduced by papers by Witzel of Dusseldorf, Ceci of Pisa, Kuzmik of Budapest, Binnie of Kansas City, Durand of Lyons, and Ranzi of Vienna.

After the close of the congress on Thursday, April 16th, most of the foreign members will make a tour of other cities, including Philadelphia, Baltimore, Washington, Chicago, Rochester, Minneapolis, Montreal, and Boston. These members have been invited also to attend the session of the American Surgical Association held in New York at the Hotel Astor on the 9th, 10th, and 11th instant.

MEDICAL OFFICERS OF CANADA

THE seventh annual meeting of the Association of Medical Officers of Canada was held at the Chateau Laurier, Ottawa, February 24th and 25th, under the patronage of H.R.H. the Duke of Connaught. The president was Lieutenant-Colonel J. T. Fotheringham, of Toronto.

On Tuesday, the 24th, addresses were given by Colonel G. C. Jones, director general of medical services, Captain F. S. Patch, of Montreal, and Major W. Scott, of Toronto. It was announced by Colonel Jones that the Minister of Militia had consented to increase the annual grant to the association from \$500 to \$1,000. Major Williams moved that the annual fee be augmented from \$1 to 2; this was referred to the incoming executive committee, as was also the proposal to make certain changes in the Constitution. Major D. B. Bentley, Sarnia, of the fourteenth field ambulance, was presented with the silver cup given by Colonel G. Sterling Ryerson for the greatest efficiency in field and ambulance work during the year 1913. In the afternoon the following officers were elected: Honorary president, Colonel the Hon. Sam Hughes; honorary first vice-president, Colonel J. L. H. Neilson, R.O., of Quebec; second vice-president, Colonel G. C. Jones, G.G.H.S., Ottawa; president, Lieutenant-Colonel T. R. McDonald, R.O., Sutton; first vice-president, Major G. M. Campbell, 63rd Regiment, Halifax, N.S.; second vice-president, Lieutenant-Colonel H. R. Casgrain, 21st Regiment, Windsor; third vice-president

Lieutenant-Colonel Murray MacLaren, St. John, N.B.; secretary, Major T. H. Leggett, Ottawa; assistant secretary, Captain Neil McLeod, A.M.C., Ottawa; treasurer, Dr. McKelvey Bell, Ottawa; executive committee, Lieutenant-Colonel A. T. Shillington, Ottawa; Major Lorne Gardner, Ottawa; Major David Donald, Victoria, B.C.; Major W. Watt, Winnipeg; Major Wallace Scott, Toronto; Lieutenant-Colonel Wyld, Montreal.

In the evening a banquet was given, at which H.R.H. the Duke of Connaught was present.

On Wednesday, a paper was read by the president on "Some historical notes on the medical service of the British army." In the afternoon an address on the results of his experiments with typhoid vaccine was delivered by Colonel Sir William Leishman, professor of pathology at the Royal Army Medical College, London. The meetings were concluded with an informal smoker, which was held in No. 2 Field Ambulance quarters.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The seventh regular meeting of the society was held Friday evening, January 2nd, 1914, Dr. D. F. Gurd, president, in the chair.

PATHOLOGICAL SPECIMENS: Series by Dr. L. J. Rhea.

1. Appendix from acute appendicitis. Removed at operation. Omentum completely surrounding appendix, demonstrating how completely it may wall off an acute inflammatory process and keep the infection perfectly localized.

2. Kidney from woman aged fifty-one, who since the birth of her first child, thirty-one years previously, has had pain in the back. During this pregnancy she had some inflammatory lesion in the kidney pelvis. Present illness: remittent pain on right side had now become acute, there was burning on micturition. Cystoscopic examination by Dr. R. P. Campbell showed bladder normal, mucous membrane red, right ureteral orifice normal, left indurated, admitting only smallest sized catheter; 5 cm. from orifice obstruction met with. The urine from the right ureter came normally, from the left no urine at all, until the ureter was dilated by the catheter probe. The left urine showed a specific gravity of 1010, alkaline, a great many pus cells and organisms; right urine normal. Phenolphthalein appeared from right ureteral orifice in three minutes, from left not at the end of fifteen minutes. A diagnosis

of hydronephrosis was made, and the right kidney removed. There are two ureters to the kidney, each empties into its own pelvis. A short distance from the pelvis one ureter shows a marked inflammatory stricture, immediately below the stricture the ureter is bulged out; there is no stricture in the second ureter; the common ureter is dilated and thickened.

3. Specimens from a man aged forty-three, a coal heaver on a steamer. Complaints: weakness, no appetite, nausea, vomiting, loss of weight, continuous subnormal temperature. Areola around nipples; slight pigmentation over body, in axilla and in mucous membrane of mouth. The clinical symptoms were sufficiently definite to make a diagnosis of Addison's disease before death, but only to the close observer. At autopsy the lungs were deeply pigmented with carbon, healed tuberculous patch; patent thymus gland; one adrenal misplaced downward, both show extensive tuberculosis. The adrenals show marked tuberculosis. Death in this case was sudden.

DISCUSSION: Dr. A. R. Pennoyer: I would like to ask if Dr. Rhea can explain the cause of the stricture, and just why there was the two ureters.

Dr. J. Kaufmann: I would like to know what were the bacteriological findings.

Dr. L. J. Rhea: I think that this woman at the birth of her first child had an inflammatory condition of the pelvis of the kidney and ureters, with ulceration at the point where the stricture formed. The question of the two ureters is, of course, a congenital anomaly, and when associated with hydronephrosis is not very common. The examination of the urine gave a pure culture of the staphylococcus albus. By direct smear, a great many organisms and active phagocytosis were found.

CASE REPORTS: 1. Foreign body in the male bladder. Dr. Wm. Hutchinson.

Dr. Hutchinson reported four cases, in three of which ordinary chewing gum had been inserted, and in one a piece of wax candle. An interesting point in these cases was the apparent insensitiveness to manipulations during examination, although the patients were suffering from acute cystitis.

2. Primary cancer of the vagina, by Drs. E. A. L. Lockhart and L. J. Rhea. Dr. Lockhart read the case report, and Dr. Rhea exhibited the specimen, which consisted of the uterus and vagina. The carcinoma is situated 4 cm. from the cervix, and in no way connected with it. On cross section it is seen that the tumour

infiltrates but a short distance into the underlying tissues, at its borders the lumen replaces the epithelial cells. The patient was aged thirty-eight and entered the hospital complaining of a red vaginal discharge with pain in the back. After thorough examination the vagina, uterus, and appendages were removed.

DISCUSSION: Dr. W. W. Chipman: This case represents a very rare condition. I have not seen a case in my own practice that I could regard as a primary cancer of the vagina, though I have met one or two that I thought were such, but on closer examination discovered that the disease had really started at the external os. This case, however, seems indisputably a primary cancer of the vagina for, as shown, 4 cm. of healthy tissue separates this growth from the external os. I would like to ask whether the woman was parous or not, and whether there had been any history of trauma, irritation by pessaries, etc. The question, of course, is why the cancer should be in such a situation. Hart's work on the development of the vagina and hymen would not account for its origin in the present situation, for it is much too high up in the vaginal wall. The microscopic slides show extremely well the advance of the epitheliomata in the superficial lymph spaces. The cancer cells are seen underlying for a considerable distance at the edge the healthy squamous epithelium. This is a demonstration of the clinical fact of the necessity of going wide of these lesions in their removal; it explains too, the frequent recurrence of the disease in the vaginal cicatrix. Hence the wide cuff of vaginal mucosa that it is always necessary to remove. This case is a rare one, and for me one of exceptional interest.

Dr. J. Kaufmann: I would like to know whether sections had been carefully made of the mucosa of the cervix or the body of the uterus to exclude possible carcinomata. We know, for instance that carcinomas of the epitheliomatous type may be present in the stomach, the starting point being either in the lips or the tongue, and at the same time being able to exclude a possible primary oesophageal focus at the lower end of the oesophagus.

Dr. C. K. P. Henry: I would like to ask if Dr. Lockhart has any details with regard to the after-history of the other case upon which he operated.

Dr. L. J. Rhea: Sections have not been made of the cervix nor of the uterus as there is absolutely no gross appearance of tumour. It would be difficult to imagine a primary tumour in this location so small that it could not be seen with a metastasis as large as the one shown in the specimen.

Dr. F. A. L. Lockhart: The patient was a multipara and there was no history of any difficult or instrumental labour, and no history of any chronic irritation was available. I was not able to follow my earlier case beyond two or three months, when there was no recurrence. Dr. Kaufmann's remarks as to the possibility of a primary focus being situated elsewhere are very apropos as I recently saw the report of a case where the condition was secondary to disease of the kidney. However, in this case, nothing could be found to indicate that the growth in the vagina was secondary.

PAPER: Cardio-renal dyspnœa, by Dr. T. F. Cotton.

DISCUSSION: Dr. J. Kaufmann: Work carried on by Dr. Meakins last year showed that the injection of large quantities of acid into the circulating blood was well tolerated; no acidosis was produced. What then are the nature and qualities of the acids producing the cardio-renal dyspnœa? Not much stress has been laid by the reader in the cases he reports on the relation between the urea in the blood and the urea excreted in the urine. It is possible that, as many of the cases show renal lesions, Ambard's constant may be increased, and that the retention of the urea may have something to do with the dyspnœa in these cases. I was interested to hear how often Dr. Cotton encountered auricular fibrillation in these large aortic hearts. When one considers that the vast majority of cases of auricular fibrillation, eighty to eighty-five per cent. are associated with mitral stenosis, his figures are rather interesting.

Dr. C. K. P. Henry: In a good many of these cases of cardio-renal asthma we are struck by the type of dyspnœa. In these cases if it is due to acidosis, could Dr. Cotton give us an explanation as to what process of metabolism it is that causes the attacks to come on more frequently at night.

Dr. Fraser B. Gurd: Certain points which have been brought up are of interest in branches of work other than the direct cardio-renal. Dr. Kaufmann referred to some of Dr. Meakins work and the results of his experiments, if I remember rightly, indicated that the so-called acidosis was very questionably an acidosis; the slight decrease in the actual alkalinity of the blood in these cases merely indicates that there is a breaking down or cleavage of complex proteids, and it is, to my mind, a very unlikely thing that the diminished alkalinity of the blood has anything to do with the symptoms which accompany the so-called acidosis. Personally, I feel more like placing all types of dyspnœa of this nature into that group of toxic split products which are of so much importance in

what we call in the laboratory the anaphylactic reaction. We have adopted this as an adequate and reasonable explanation of the development and persistence of this phenomena in certain individuals whose excretory function is interfered with, and whose metabolic processes are put to the strain.

Dr. T. F. Cotton: The nature of the acidosis was not determined. We could exclude any increased production of acids, because there was no increase of acids in the urine. What the acids were in the blood, we did not determine, except that there was no increase in lactic acid. A Viennese investigator said he had found an increase of formic acid in the blood; this, however, was doubtful. As for the constant of Ambard, I did not do it in this number of cases for the reason that our cases were elderly individuals, and it is requisite to catheterise these individuals in order to completely empty the bladder. The test is of value, however, in the border-line cases where, in estimating the urea in the blood you might have no retention, but find an elevation of the constant. But if there is any marked retention, there will be a parallel increase in the constant of Ambard, so much so that in Widai's clinic it is not done as a routine, the simple estimation of the urea in the blood being considered sufficient to determine the permeability of the kidney.

It is quite true that fibrillation was common but any derangement of the heart mechanism might be present. Two other cases I have had, one a partial heart-block going on to a two-to-one heart-block; pulsus alternans was present and all forms of premature contractions. As for the nocturnal dyspnoea, one cannot explain it. As for the dyspnoea with acidosis in two of our cases we made a second analysis, and the acidosis which was present with the dyspnoea disappeared with the disappearance of the dyspnoea.

THE eighth regular meeting of the society was held Friday evening, January 16th, 1914, Dr. W. F. Hamilton, vice-president, in the chair.

LIVING CASE: Patient illustrating anterior metatarsalgia and its treatment, by Dr. A. MacKenzie Forbes:

I had hoped to be able to show two patients to-night, first, a case of anterior metatarsalgia, the second a case which had been operated on for anterior metatarsalgia between three and four months ago. In anterior metatarsalgia, in claw foot, and in one or two other affections, one of the symptoms particularly noticed is contraction of the extensor tendons of the toes. This is prob-

ably due at first to muscular spasm. As this contraction goes on the phalanges gradually become subluxed on the dorsal surface of the metatarsal bone and form with them a bow of which the extensor tendon is the bow string. The greater the spasm the greater the contraction of the tendon and the more convex becomes the osseous bow and the greater the dorsal subluxation of the toes. This dorsal subluxation, combined with the contraction of the extensor tendon, causes a pressing downwards of the heads of the metatarsal bones. These are pressed against the soft tissues beneath them and this pressure is the greatest cause of the pain associated with this condition.

The rational treatment to lessen the tension on either the bow or the bow-string is either to lengthen the bow-string or shorten the bow. In the past we have nearly always endeavoured to lengthen the bow-string by tenotomies. Unfortunately, however, we have not succeeded in many cases. We have been practising, therefore, in the Montreal General Hospital, for some years past the other suggestion, namely, we have shortened the bow by transplanting the extensor tendons to the heads of the metatarsal bones from their place of insertion on the dorsal surface of the phalanges. The operation has proved a success in a number of cases and I had hoped to-night to be able to present a second case demonstrating the advantages of this procedure. As, unfortunately, the patient has not reported to-night I will endeavour to do so at our next meeting.

PATHOLOGICAL SPECIMENS: Series by Dr. E. J. Mullally.

1. Heart from a case of chorea. Young man, aged seventeen, chorea for three months before entering hospital, extreme condition. Worker in a tobacco factory and a large user of tobacco. Patient developed acute pulmonary oedema and died. The specimen shows on the middle cusp of the mitral valve a line of small sand-like vegetations; if the patient had survived the attack the valve, in all probability, would have become contracted and the usual condition of chronic endocarditis would have resulted. The specimen is of interest on account of the presence of this acute endocarditis.

2. False aneurysm of popliteal artery. Tissue removed by operation from a man aged seventy-one. The patient fell from a mowing machine striking the popliteal region. A small swelling developed which slowly increased in size for four weeks; it was painful and there was beginning discoloration of the big toe, which increased to half way between the ankle and the knee. On

entering the hospital the swelling was the size of a big turnip and a diagnosis of ruptured aneurysm was made. The leg was amputated. The specimen shows exactly where the rupture took place in the popliteal vessel and one portion of the section shows the extreme arteriosclerosis of the artery.

3. Uterus and rectum removed at autopsy from young woman aged twenty-two years. Patient married eighteen months; a few months after marriage developed anæmia, headache, signs of dizziness, and general depression. The anæmia progressed and when she entered hospital she had a blood count of 1,000,000 red cells, 8,000 whites and 20 per cent. hæmoglobin. She had an ulcerated throat and diarrhœa developed a few weeks before she entered hospital. She was found pregnant about two and a half months; had a miscarriage while in hospital and died a few hours later. At autopsy the uterus, placenta, and amniotic membranes were removed intact. The rectum shows extensive syphilitic disease, the organ being practically moth-eaten with ulcers all the way up to the sigmoid which was also invaded.

DISCUSSION: Dr. Fraser B. Gurd: I should like to know if any cultures were taken, or organisms isolated, from the case of chorea, from the heart valves or elsewhere. In the *Journal of the American Medical Association* of this week two cases are reported from which the streptococcus viridans was isolated in pure culture from the blood. In the case of ulceration of the rectum I should like to know on what grounds the diagnosis of syphilis was made, whether other than merely circumstantial.

Dr. H. B. Cushing: I saw the young man with chorea in the wards and it was an extremely severe case, practically maniacal.

Dr. E. J. Mullally: As far as I remember I do not think any organisms were recovered from the case of chorea. The case of syphilis was diagnosed on exclusion; the history was so circumstantial: healthy till marriage, ulcers in the pharynx, extensive ulceration of the rectum, miscarriage, extreme anæmia, all pointed to such an interpretation.

CASE REPORTS: (1) Meningo-encephalocele superior occipital; operation, recovery, by Dr. E. W. Archibald. Dr. H. A. Sims exhibited slides of the brain tissue removed.

DISCUSSION: Dr. W. M. Fisk: Only last Tuesday I had a similar case which was rather interesting from an obstetrical point of view. A primipara aged twenty-three, about three weeks short of full term. Labour started at 6 a.m. with rupture of membranes and I saw her at 10.30 a.m., she was then having hard pains every

three or four minutes. Palpation showed vertex presentation L.O.A., head well engaged. On vaginal examination os completely dilated and lower vagina seemed to be filled with the amniotic membranes bulging into perineum with each pain, the after-coming head could be felt through this sac. Examining again I found hanging from the vulva a collapsed sac of hairy skin and now realized that I had to do with a ruptured meningocele. The baby weighed seven pounds, and cried lustily. When distended the meningocele must have been as large as the child's head and arose from the occiput by a comparatively narrow pedicle. As there was considerable oozing of cerebrospinal fluid and blood I ligated the pedicle. The baby developed convulsions ten hours after birth and died the following day.

Dr. E. W. Archibald: With regard to Dr. Fisk's case the death was probably due to the sudden excessive loss of cerebrospinal fluid, with probably some continuing loss later. We know clinically that when we allow too much cerebrospinal fluid to escape rapidly at operation, convulsions are apt to ensue and the patient dies without pathological evidence *post mortem* to show the cause of death.

2. Puerperal pyæmia, by Dr. D. J. Evans. Patient multipara, aged thirty, pregnancy uneventful excepting moderately severe nausea and vomiting throughout whole period. Labour normal. Slight rise of temperature after fourth day at 100° and not above. Tenth day, examination; uterus large, boggy, patulous os, slight tenderness to one side of uterus. Small portion of placental tissue removed, intra-uterine douche and light gauze packing. Chills, temperature, cold sweats, jaundice, trace of albumin and bile, marked tenderness over liver, spleen large and easily palpable, increased liver dulness, cholangitis secondary to pyelophlebitis, vague pains in chest, irritable cough, sputum tenacious, râles at base of right lung; no definite abscess area noted. Intravenous injections of collargol otherwise treatment general. Shortly before death liver dulness increased, spleen subsided, not palpable. Took nourishment better, pulse variable. Pain in left axillary line, dyspnoea and cyanosis increased. Death a little more than a month after delivery; mind clear until a few minutes before death. Child lived and did well.

Autopsy showed in right fornix of uterus a small piece of placenta; thrombosis of veins extending from this to vena cava inferior; acute nephritis, cloudy swelling of liver, septic spleen, cloudy swelling of heart, pulmonary abscesses; purulent pleuritis, spleno-

anæmia. A case of typical pyæmia. Dr. Evans exhibited specimens of the organs removed, showing the septic condition present.

DISCUSSION: Dr. W. W. Chipman: I am sure we do more harm by going into the puerperal uterus for portions of placenta that may or may not be there, or for retained membrane, than if we had stayed out. The practice up to the present has been to interfere too much, but a revulsion of opinion has set in with regard to these puerperal cases, and, speaking generally, it is wisest not to enter either with the finger or an instrument the puerperal uterus. Davis of the New York Lying-in Hospital recently told me that "in cases of puerperal infection I merely prop the patients up in bed and put them out on the balcony and I leave the uterus alone." In my experience an adherent placenta is an extremely rare thing, though a retained placenta is common enough. And most of us will agree that a third stage that is managed well—managed, that is, not by the clock, but by the recovered activity of the uterus—will result only in the most exceptional cases in a piece of placenta being left behind. It is true that a piece of membrane may be left, and this is a matter that is difficult to estimate. When you are in doubt the wise thing is not to enter the uterus cavity and search for it, but rather to interfere as little as possible. There is in reality only one excuse or reason for entering the puerperal uterus, and that reason is hæmorrhage. Dr. Evans' case affords us an admirable text, and an admirable guide for the general procedure should be this: that the more seldom you enter a puerperal uterus, the better your results will be.

Dr. F. R. England: After delivery when a portion of the membranes or a piece of placenta is retained in the uterus it remains harmless as a rule so long as the uterus is left alone. There may be hæmorrhage, possibly sapræmia, but rarely indeed does one get sepsis. Wherein then comes the danger in operative interference? Is it possible to explore the uterus several days after delivery without carrying in infective material? In the case under discussion were pathogenic organisms lying latent in the uterus and simply stirred into activity by the interference or were they carried in at the time of operation? This is an important matter and I would like to ask Dr. Evans his opinion.

Dr. D. J. Evans: I would say that it is the routine of the hospital that after ten days patients are examined internally by the superintendent or officer in charge, and this treatment was made during my absence as a routine examination and I was not informed of what had taken place until after the accident had happened.

My treatment always was to leave the patient alone and put her out on the gallery in the upright position. If this case had been left alone it seems to me nothing would have happened. In a normal healthy woman at labour the uterus is aseptic, the vagina anti-septic, the vulva septic. In the whole process of normal labour the flow is from the aseptic to the septic. Now if we get a uterus closed tightly, even though it has something inside the cavity, if you can keep the flow from going upwards the chances are that it will take care of itself. After, in ten to fourteen days, the decidual lining has been removed, small-celled infiltration has taken place and has erected a primary line of defence in the deeper layers, and the only part that is really vulnerable by that time is the placental site, which does not heal up till about the twenty-first day. Therefore, if you start in from the septic, through the anti-septic to the aseptic it will not stay aseptic very long, and serious consequences almost certainly follow any intra-uterine interference.

PAPER: Experimental duodenal ulcer, by Dr. L. L. Reford.

Dr. Reford illustrated his paper by the exhibition of specimens from the animals on which he had experimented showing enormously enlarged gall bladders and the experimental duodenal ulcers from double ligation of the common duct.

Dr. E. W. Archibald: It is the French school, I think, which has particularly pointed out the comparative frequency of hæmorrhage from the alimentary tract in conditions of persistent jaundice in the human. We have in that fact a possible analagon of Dr. Reford's experimental findings. We may not unreasonably conclude that some of these hæmorrhages in our patients with jaundice are from duodenal ulcers that do not go on to perforation.

WINNIPEG GENERAL HOSPITAL

THE usual monthly clinic of the Winnipeg General Hospital was held on March 2nd, when the following programme was presented.

Dr. McCalman: (a) Polyhydramnios with foetal dropsy. (b) Cæsarean section for threatening eclampsia.

Dr. Galloway: "Typhoid spine."

Dr. Hunter: "Diaphragmatic Hernia." x-ray plates presented by Dr. Watt.

Dr. Lineham: "Destruction of female breast through use of quack cancer cure, original mass in breast being non-cancerous."

TORONTO ACADEMY OF MEDICINE

At a special meeting of the Toronto Academy of Medicine, held March 2nd, 1914, Colonel Sir William B. Leishman, professor of pathology in the Royal Army Medical College, London, delivered an address on "Typhoid inoculation."

Sir William related shortly the history of his association with Sir Almroth Wright and told of work done by him unofficially in Sir Almroth's laboratory at Netley at the time when the latter had just introduced the system of inoculation for the prevention of typhoid fever. At that time a big epidemic of typhoid broke out in Baring Asylum and, as Sir Almroth was just going off to India as a member of the Plague Commission, his assistant, now Sir David Semple, took his place to carry on the inoculation. Sir David Semple collapsed while incubating Malta fever and Sir William Leishman was asked to continue the work. The strong argument against inoculation is the belief in the negative phase, that is, that there is a moment following inoculation in which the resistance to infection is not only not increased but actually lowered. Although it might be supposed that this phase would be encountered in the asylum, if anywhere, and although nearly one hundred attendants were inoculated with large doses of vaccine, among others going down every day with the disease and a good many dying, not a single inoculated person contracted enteric. From this it would appear that there is no practical danger of the negative phase in inoculation with dead typhoid cultures.

Sir William then gave an account of the results of inoculation during the Boer war, and of the subsequent carrying out of the famous "test unit experiment" in the British army, the results of which proved beyond doubt the value of the method. He also described the preparation and administration of the vaccine used. The substance of his remarks on these points may be found in the editorial on page 314 of this issue. In speaking of the other vaccines, of which there are many in use, he pointed out that though the living vaccine of Befredka probably afforded the highest degree of immunity, there were grave dangers involved in the widespread use of living bacilli for the purpose.

Sir William said the treatment of typhoid fever was beyond the experimental stage, and the treatment of cases of enteric by typhoid vaccine was thoroughly scientific and he strongly advocated its use. He had seen grave toxic cases treated in this way change their character completely in a period of from twenty-four to forty-eight

hours, not that the temperature came down straightway to normal and the attack of fever was aborted, but the temperature ran along at a much more moderate level, and above all a change for the better took place in the condition of the patient. The temperature following inoculation usually rises in twelve hours to a slightly higher level than one would expect in an uninterrupted case. The local reaction is very slightly in evidence. Within twelve hours or so after the rise, the temperature drops to a lower level than one would expect in an ordinary case and only by degrees comes up to the old level. Another inoculation brings it down a little lower and when two or three doses have been administered it comes down to normal and remains normal. The duration of the attack is not greatly shortened but there are fewer complications and relapses are much more rare. Monsieur Natelle's digest of some forty papers published in different countries shows what this method of treatment is doing. These cases, thirteen hundred and ten in all, had a mortality of only 5 per cent., and among them were cases treated by doses of vaccine that were useless. Some were too small and others one could have no confidence in. With an effective vaccine, the mortality would be 1 per cent. or 2 per cent. One should start with an initial dose of two hundred million of the ordinary prophylactic vaccine and repeat the dose on the third occasion to say five hundred million. A smaller dose would have no effect. But much information is still required on the subject. The treatment is harmless and scientific and is the most promising treatment in typhoid yet known.

As to the application of typhoid vaccine in civil life, Sir William spoke as follows: "It seems to me that, if we control typhoid in the army in peace, and we hope to do so in the future in war, you in civil life should not hold your hands from the benefit of such typhoid vaccination, especially if you are threatened or exposed to typhoid in your immediate surroundings. Measures of protection against typhoid, such as improved water supply, an improved sanitation generally, instruction of the people as to the care necessary to prevent this disease, are all excellent aids but do not take the place of typhoid inoculation. This vaccine is a very simple thing to prepare. I have had brought to my notice in several ways during the few days spent in Canada that you suffer largely from typhoid in this country. For example, Ottawa has had a severe epidemic and typhoid is at large in various parts of your country districts. If you could organize a campaign against typhoid to persuade people likely to be exposed to infection to be inoculated,

you would be doing great good to this country and to science in general, and in that way accumulate information that would convince every one. I was bold enough at Montreal the other day to suggest that the authorities should vaccinate the whole population. That seemed a tall order, but I do not see why it should not be done. We do not know when we may catch typhoid ourselves, why throw away the chance of preventing such an occurrence. Thinking over the matter from that point of view, you will have three sets of people to convince. First and most important, yourselves, for it is your business to convince the second set, the authorities, and thirdly, the people you are going to inoculate. The authorities are the hardest nuts to crack. You may have trouble with them, but not with the people. The latter are extraordinarily amenable to the influence of the medical man whom they trust. If you are convinced and believe typhoid inoculation is a good thing, it will do you no harm if you inoculate yourselves except to cause a sore spot or a sore head for a day or so. If you inoculate yourselves very few people will refuse inoculation when it comes to their turn. Of course there is a prejudice against this form of treatment, as there is against vaccination for smallpox, but these prejudices vanish in the presence of danger. When the relatives and children are contracting enteric their friends will fly to you and you will have no difficulty to get them to accept treatment. I believe personally most strongly in the benefits to be derived from this method of treatment and, if I may give you advice, should urge you to use it to the utmost as an aid to the weapons which you employ in fighting the disease."

The Lieutenant-Governor of Ontario, Sir John Gibson, in rising to move a vote of thanks, complimented the lecturer on the very clear manner in which the subject had been presented and spoke with appreciation of the recent advances in preventive medicine. It was as interesting as it was surprising, he said, that there was evidence such as had been laid before them of a completely efficient method of dealing with typhoid fever. It was a pleasing thing that the number of eminent men from the Mother Country visiting Canada was growing greater year by year.

CANADIAN PACIFIC MEDICAL ASSOCIATION

A CONFERENCE was held at Vancouver, March 5th, between officials of the Canadian Pacific Railway Company and local

representatives of the employes. The proposed extension of the medical service of the Canadian Pacific Railway was formally approved and delegates were appointed by the employees to draft a constitution and to proceed with the formation of the new society, which will be named the Canadian Pacific Medical Association of British Columbia. The new organization will be under the control of the employees and membership will be voluntary. The privileges of the service will be extended to all employees in the division who become members and to their wives and families.

ONTARIO COUNTY MEDICAL ASSOCIATION

A MEETING was held at Port Perry on March 11th, last, at which the Ontario County Medical Association was organized. The officers elected were: president, Dr. J. S. Mellow, Port Perry; vice-president, Dr. J. McClintock, Uxbridge; secretary-treasurer, Dr. J. Moore, Brooklin. Executive council, Dr. Sheir, Uxbridge, Dr. Hoig, Oshawa, Dr. Broddy, Claremont, and Dr. N. Blanchard, Sunderland, with the president, vice-president, and secretary-treasurer.

KINGSTON MEDICAL ASSOCIATION

THE Kingston Medical and Surgical Association held its regular monthly meeting on Monday evening, February 16th, with twenty-four members present. Dr. Anglin, the retiring president, introduced Dr. Gardiner, the incoming president, who delivered a short address. Short reports on clinical cases were presented by Drs. Third, Gardiner, Anglin, Morrison, and Bogart. A prolonged discussion took place on the subject of fee-splitting, or dichotomy, and the following motions were carried unanimously:

"That this association desires to place on record its unreserved condemnation of the practice of fee-splitting," and "That any member of this association found guilty of this practice (of fee-splitting) shall thereby forfeit his membership."

The following resolution also met with the unanimous approval of the members: "That the Kingston Medical and Surgical Association respectfully requests the city newspapers to leave out the names of the attending physicians and surgeons in their reports of accidents, operations, or other cases of sickness."

The Canadian Medical Association

Annual Meeting, 1914, St. John, N.B., July 7th, 8th, 9th and 10th

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The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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The Canadian Medical Association Journal

VOL. IV.

MAY, 1914

No. 5

AUTO-INFECTION ASSOCIATED WITH THE INTESTINAL CANAL

BY GEORGE E. ARMSTRONG, M.D., LL.D., (QUEENS),
D.Sc. (LIVERPOOL)

Professor of Surgery, McGill University

THE idea that the bowels should move more or less regularly is probably as old as humanity. I cannot say just how early reference is made to this subject in "dry as dust" literature, but in our own time we are more or less familiar with the spring cleaning medicine, the blue pill and the morning saline.

Among the physicians who in comparatively recent years have emphasized the importance of attention to the intestinal content may be mentioned the late Sir Andrew Clark, who advised the use of salines, particularly in certain forms of anæmia. Metchnikoff's work is along similar lines. More recently, the attention of the profession on two continents has been directed to the subject by a distinguished London surgeon. The subject has assumed a wider scope. Sir W. Arbuthnot Lane, in his teachings and in his writings, dwells upon two distinct conditions, first, the altered relative position of the large intestine and the viscera in the abdomen, the resulting changes seen in the attachments of the large gut together with its alteration in form and position, and the changes that occur in the mucous lining of the stomach and small and large intestine; and, secondly, the general toxæmia that is gradually developed from the absorption of toxic materials from the altered intestinal canal.

Let us consider these two questions separately, and first, the anatomical changes indicated by Sir Arbuthnot Lane.

Read before the Montreal Medico-Chirurgical Society, February 6th, 1914.

The first and most conspicuous changes are seen in what he regards as the cesspool of the system, viz., the large intestine. They are first apparent in the cæcum which may become so dilated and elongated that when distended it occasionally fills the entire pelvis. Definite bands or adhesions are seen between the outer aspect of the large bowel and the peritoneum covering the abdominal wall in its vicinity. Incidentally, the appendix sometimes becomes hitched up about its middle and kinked, retarding or arresting drainage from its distal end.

The ascending colon becomes dilated. The upper limit of the ascending colon is abnormally fixed and occupies a higher position than in the healthy subject. This is caused by the contraction of an acquired band of peritoneal adhesions which drag the hepatic flexure upwards and help to oppose the downwards displacement of the large bowel. The anchoring band is attached to the kidney, and may acquire such an intimate relationship to the ilio-hypogastric, ilio-inguinal and last dorsal nerves that it is difficult to differentiate between conditions due to the drag of the colon and those due to the kidney. There is much wasting of the involuntary muscle in the wall of the gut. The transverse colon forms a loop with its convexity downwards. A portion of the loop frequently occupies the true pelvis, sometimes reaching to its floor. The splenic flexure is also dragged upwards and backwards by a hypertrophy and contraction of the pleuro-colic fold, supplemented by other peritoneal bands of new formation developed with the object of sustaining the strain on this flexure exacted by the loaded transverse colon in the erect position. The sharpness of the angles at the hepatic and splenic flexures is increased. The descending colon is small and the sigmoid flexure may become a short, straight, constricted tube.

Sir Arbuthnot Lane believes that these adhesions are developed to oppose the displacement of viscera, the tendency to which exists whenever the erect posture of the trunk is assumed, and are not inflammatory. The bands, adhesions and membranous films were described long ago by Virchow. They correspond to the parietocolic fold of Jönnesco and the bloodless fold of Treves. Whether they are congenital and secondary to certain abnormalities in the rotation and descent of the cæcum, as suggested by Mayo and Cheever, or the result of repeated mild infections, as indicated by Pilcher, Gerster and others, or evolutionary, that is, developing from increased strain caused by the erect position of the body, is not yet definitely established.

Some of my cases of "ileal kink" have shown a smooth band passing from the under surface of the mesentery to the antimesenteric border of the ileum, but a considerable number, probably over fifty per cent., have presented an appearance of scar tissue. The last one found was in a medical student, the band seemed to be composed largely of scar tissue, radiating in different directions, and adjacent was a large, soft, evidently infected lymph node. This case certainly suggested that ileal kinks may be due to bands forming secondary to infection of the lymph nodes that are abundant about the lower end of the ileum; that an adhesion occurs between the intestine and the mesentery which later on gradually stretches into a band,—a theory, by the way, that harmonizes with the teaching that there is normally a stasis of some hours in the lower end of the ileum.

The stomach and liver become displaced secondarily as well as the kidneys. These changes in the position and relations of the viscera are regarded as a result of mechanical conditions other than normal, such as excessive pressure or strain. They are regarded as compensatory.

Conditions similar to those described by Sir Arbuthnot Lane are familiar to physicians. They see *x-ray* plates that show the transverse colon displaced downwards, the flexures of the colon, especially the splenic, occupying a high position, and surgeons observe the condition at the operating table.

It occurred to me that it would be interesting to know what the anatomists regarded as the normal position of the abdominal viscera. To determine this point, I visited the professor of anatomy in the McGill Medical School, Dr. Geddes, and I think the visit was well repaid. Dr. Geddes has given some attention to this subject and I am sure you will all be interested in a brief, although I fear, somewhat imperfect recital of his conclusions drawn from observations made on the cadaver.

Dr. Geddes recognizes certain types that are more or less definite. First, is the high position seen in the young and called the infantile type, associated with small pelvic capacity, power and bulk of the abdominal and pelvic musculature, forcing the viscera to find room in the upper segment of the abdomen, which is large because of the thoracic development. In the female type the lower position is due to a relatively larger pelvic capacity, relative weakness and smaller bulk of the abdominal and pelvic muscles. In this type the lower thoracic segment is of smaller diameter. In later stages of pregnancy its expansion provides room for the

abdominal contents. The difference between the male and female type is most marked in the Caucasian or large-headed races.

At birth the stomach is vertical. This position is due to the pressure of the large liver. As the relative size of the liver diminishes and the power of the abdominal muscles increases, the stomach swings upwards and, at the age of five years, its greater curvature is absolutely horizontal in the bodies of children fixed in the supine position. This position remains practically without change until puberty. In the female the stomach begins to swing downwards at puberty. It gradually becomes more and more oblique until, at the close of adolescence, it is vertical.

In some lads at puberty the stomach descends into a slightly oblique position, but rises again when the post-puberal muscular development takes place. At this time its greater curvature becomes quite horizontal in subjects fixed in the supine position.

In women, after the first pregnancy, and apparently associated with relaxation of the pelvic floor and abdominal wall, the stomach would seem invariably to descend.

In man, as life advances and the muscular development declines and the thoracic diameter diminishes, the stomach assumes an oblique position which, in extreme cases, may closely approximate the vertical.

These observations are of great interest to clinicians. Prof. Geddes, in addition, has made an observation which I think is of great value. In a subject obtained soon after death, the abdominal muscles were stimulated to contraction by the injection of formalin. On then opening the abdomen it was found that the intestines had all been forced into the loins and pelvis, and that only the great omentum, mesentery and aorta lay between the abdominal wall and the anterior surfaces of the bodies of the vertebræ. This experiment of Dr. Geddes' strongly supports the view that the abdominal muscles are the active and most important force in holding the abdominal viscera in position. I believe it is a recognized fact that in strong, muscular men ptosis is not seen, in the hardy little Italian navy ptosis does not exist. This view harmonizes with clinical experience. Ptosis and its associate symptoms are seen in people of weak and lax musculature.

Sir Arbuthnot Lane places "absence of the normal support afforded by the abdominal walls" as the third factor rendering the kidneys more or less mobile. I am strongly of the opinion that insufficient support of the abdominal wall and pelvic musculature is the first and prime etiological factor in ptosis of the abdominal

viscera, including the different portions of the gut. The lessons learned in the dissecting room are in accord with Lane's observations and teaching.

The second contention that a general toxæmia results from the absorption of toxic material from the altered intestinal canal, and also a diminished resistance to infection and nervous irritation opens up a large and almost unexplored field. That there is something in it, as the man on the street might say, is attested by the relief from medicines that clear the small and large bowel more or less completely; by the good results obtained in the application of the principles of Metchnikoff's, and the still more wonderful benefits seen after Lane's short-circuiting. Our knowledge concerning the toxic materials formed in the intestine and their absorption is limited. The advantages of specialization are too great and too numerous to be questioned, but when we approach the physiologists, chemists and pathologists on a question of this kind it becomes apparent that a closer working relationship between the laboratory man and the clinician would be to the advantage of both. The clinician would acquire a sounder foundation on which to build, and the laboratory man be made to sympathize with the needs and responsibilities of physician and surgeon, and to direct his research to a solution of the great problems of the bedside. To Cunningham, Huntingdon and Geddes we owe much. To the experimental work of Pawlow, Starling, Cannon, Carrel, Crile and Cushing we are all deeply indebted. I know of no more promising field for the physiological and pathological chemist than a study of the bacterial flora of the intestine and the absorption of food products and toxic materials.

Sir Arbuthnot Lane regards the large intestine as the cess-pool of the system, and his results in short-circuiting and after the removal of the greater portion of the large intestine would seem to support this view. The foregut, which ends at the third part of the duodenum would seem to prepare food for absorption but not to absorb, unless perhaps the stomach and duodenum may absorb stimulants. The midgut, according to Keith, ends functionally at the splenic flexure and is intimately concerned in the absorption of solids and liquids. The descending colon is a simple tube connecting the lower end of the absorbing midgut with the sigmoid flexure or iliac colon which is the real scavenging barrel.

That most of the proteids are taken up from the small intestine would seem pretty clear. Probably every surgeon can recall instances in which, after opening the abdomen soon after the inges-

tion of a meal, numerous white streaks were seen in the wall of the jejunum. These white, milky streaks are the lacteals filled with proteids. The liquid contents of the cæcum, ascending and transverse colon, gradually lose a very large part of their water and the residue is sent through the descending colon to the scavenging barrel. These observations are the basis of the theory that the system gets its proteids from the small intestine and its water supply from the large bowel.

It has generally been taught that when the contents of the small intestine passed into the large bowel, they did not return into the small intestine. This view has obtained since 1579 when Caspar Banhin discovered the ileo-cæcal valve. Radiography has shown that while it is true that there is very little mixing of the contents of the small and large intestines yet sometimes bismuth and barium have been seen passing through the ileo-cæcal valve from the large to the small intestine. John Hunter realized the importance of more definite knowledge of the functions of the ileo-cæcal valve (*B.M.J.*, 1912, 2-1599). Keith, in 1903, concluded from anatomical considerations that there was always a functional muscular sphincter at the junction of the small intestine with the great. It is present in the amphibian bowels, the reptilian, avian and mammalian, as the transverse layer of the muscular coat of the ileum is greatly thickened where it enters the colon, and in the following year Elliott proved experimentally that such a sphincter exists. Hertz coincides with this view and thinks that there can be no doubt that the function of the ileo-cæcal sphincter, as suggested by Keith, is to prevent the contents of the ileum passing too rapidly into the cæcum. Keith and Newton, of Melbourne, have found that the bismuth-containing chyme reaches the end of the ileum an hour or even longer before any appreciable quantity passes into the cæcum, and that the ileum is often still full four, five, or more hours after the last traces of bismuth have left the stomach. These observations should be remembered when reading x-ray plates or making fluorescopic examinations.

We are indebted (*Journal of Physiology*, October, 1913), to Hertz, Newton, Schlessinger, Holzknacht, Barclay, Elliott, Cannon and others for much information regarding the movements of the contents of the colon. They find that these movements are not slow but that they occur quickly and at comparatively long intervals. During these movements the usual haustral segmentation disappears, to return again immediately afterwards. Local contractions of single sacculi have been observed. Another interesting

observation is that the entrance of food into the stomach appears to stimulate the lower end of the ileum and the cæcum, ascending and transverse colon to contract, or, as stated by Hertz, "it is now clear that the filling of the cæcum depends, to a large extent, upon a gastro-ileac reflex, which results in active peristalsis in the end of the ileum and relaxation of the ileo-cæcal sphincter whenever food enters the stomach."

The apparent object of the anastalsis observed in the large gut is to delay the contents of the cæcum and cæcal colon until the water is absorbed and the bacterial digestion in the cæcum is completed.

John Hunter left a number of specimens illustrating the structure of the large bowel in all classes of vertebrates, but the task of describing and interpreting Hunter's specimens fell to Sir Richard Owen. His conclusion was that gastric digestion could be repeated in the cæcum. Barclay Smith, in 1902, claimed that the changes in the food within the great bowel are not due to any digestive secretion, but to the action of bacteria which find a permanent abode in the cæcum and colon. The ileo-cæcal sphincter may be then regarded as having a twofold function, to prevent the putrefactive matters from receding into the ileum, and then to delay the emptying of the lower end of the ileum into the cæcum. Dr. Barclay Smith has drawn attention to the rich supply of lymphatics about the ileo-cæcal region and he regards this as a protection to the body from the bacterial hosts employed in cæcal digestion.

It would seem then that the large intestine has a function to perform although Dr. Barclay Smith expressed himself in 1902 as convinced that the large intestine is a useless incumbrance. In 1903 Metchnikoff stated that the rudimentary appendix, the cæcum and the whole of the large intestine are superfluous and that their removal would be attended by happy results. Prior to either of these statements Lane had reached the conclusion that the human cæcum and ascending colon served, in a class of cases described by him, as a cesspool, and had put his theory into practice.

Keith considers that there are in the ileo-cæcal region three parts which appear to be demarcated for functional purposes: (1) The cæcal colon which lies above or beyond the ileo-cæcal orifice; (2) the cæcum proper which lies below or proximal to the ileo-cæcal orifice and arises as a diverticulum from the cæcal colon; (3) the apical or appendicular part.

In the rat's cæcum and in the human cæcum there is a distinct sphincteric ring near the junction of the cæcum and cæcal colon.

In the human, this sphincteric ring or cæcal sphincter is permanently united with the ileo-cæcal orifice and forms the well-known retinacular bands.

Cannon has shown that anastalsis is the characteristic movement in the proximal part of the colon in the cat, and many observers have corroborated the statement that anastalsis occurs in the human colon. Bond's reversed mucous currents may be thus explained.

Wilkie (*Journal of Pathology and Bacteriology*, Vol. xvii), observed *post mortem* a marked contraction of the cæcal colon; indeed, the appearance suggested an organic change in the bowel wall which on further examination was found to be normal.

A somewhat startling view is put forward by Schwarz and others, viz., that constipation is generally due to spasm, very seldom to atony; and Magnus claims that senna inhibits anastalsis in the cat's colon. Stearlin has demonstrated that senna in the human cæcum prevents the physiological delay in the onward passage of the fæces.

Vaughan Harley (*Proc. Royal Soc.*, Vol. lxiv), did some experimental work to determine the "Influence of removal of the large intestine and increasing quantities of fat in the diet and general metabolism in dogs," and found that the large intestine itself secretes a substance which contains proteids, fats, and salts and differs from the contents of the small intestine in that it does not contain any colouring matter. He found that the principal effect of removing the large intestine from dogs was to greatly increase the quantity of fæces with the same diet, an increase due mainly to unabsorbed water. He found the nitrogen and protein absorption slightly reduced (from 92 per cent. to 84 per cent.). He also found the aromatic sulphates diminished in the urine thus showing a lessening of intestinal putrefaction.

Starling finds that an important function of the large bowel is to excrete somewhat variable quantities of calcium, magnesium and iron and also phosphates. These substances are also eliminated to a considerable extent from the urine.

There is little doubt that the theories regarding the absorption of solids and liquids are, in the main, correct. They are, nevertheless, primitive and rudimentary and, for the clinicians' needs, sadly incomplete. We are concerned with deviations from the normal. We want to know more of the nature of the toxic materials that under more or less abnormal conditions may be taken up from the intestinal canal, and from what parts of that long canal

they are most likely to find their way into the body generally. It is stated by Sir Arbuthnot Lane that when intestinal stasis is present, toxic materials are absorbed that cause loss of weight, discolouration of the skin, gastric and duodenal ulcer, chronic mastitis and malignant disease of the breast, exophthalmic goitre, tic douloureux, joint lesions, as well as lowered nervous tone, irritability and lessened nervous energy. Surely it is fair to assume that there is a variety of toxic materials due to the action of different fermentable bodies and different fermentative and chemical changes. It is thinkable that not only the upright posture and weakened musculature are to be considered, but also changes in diet that have taken place in recent years, such as the increased consumption of meat and the smoother flour produced by the present milling processes. I have obtained some assistance from Dr. Bruère who is always up-to-date on questions of biological chemistry, but there is a dearth of knowledge of the toxines formed in the intestines. Indol is formed as the result of bacterial fermentation of proteids in the intestines (chiefly in the large). It is absorbed as indoxyl, or oxidized indol, and is excreted by the kidneys as the indoxyl sulphate of potassium. We have little knowledge of the effect on the economy of the etherial sulphates. Here is a promising field for the bacteriologist and chemist.

Bond's demonstration of the antiperistaltic action of the large bowel explains the good results obtained by rectal salines and rectal alimentation. His "reversed mucous currents" harmonize with clinical experience. Only a few days ago I observed a condition that I think worthy of note. The clinical diagnosis was partial obstruction and the operation undertaken to relieve it. An adventitious band was found in the pelvis partially constricting the ileum at about its middle. For two feet or more on the proximal side of the band the ileum was filled with hard, dry, faecal masses similar to those commonly found in the sigmoid. They could be distinctly seen and felt. This would show that the greater absorption of water from the ascending colon was due, in part at least, to physical conditions.

When Sir Arbuthnot Lane first advised short-circuiting and colectomy for chronic constipation, I think many surgeons regarded the view as extreme and applicable to a very small class of cases. When the same procedure was recommended as a means of curing tuberculous hip disease, the idea produced a feeling in some minds little short of consternation. Reiteration and the publication of clinical results have made surgeons think very hard. Those who

have visited London and seen his work have been impressed with the results shown and by his perfect technique. I have visited his clinic at Guy's many times, but have been very slow in acquiring a full appreciation of his work. Finally, I decided to take Hunter's advice and try it. I have short-circuited ten cases. I will give you a very brief summary of them. They are too few in number and of too recent date to justify conclusions but the results in some of them are promising.

CASE 1. Mrs. H., aged forty-four, referred to me by Dr. C. F. Martin. Has suffered severely from megrim and an intractable form of asthma for many years. No treatment ever afforded more than temporary relief to either the asthma or the headache. Dr. Martin and I placed the question of short-circuiting before her in a very guarded way. After consultation with her husband she decided to submit to the operation, which was performed in November, 1912. A letter, dated December, 1913, says that the headaches are less but that the asthma is not improved.

CASE 2. Mrs. S., aged fifty-eight, was sent to me as a case of gastric carcinoma. For seven years she had suffered at times from severe epigastric pain and vomiting, the attacks lasting several days. The pain did not seem to bear any influence to the taking of food. She had lost thirty-four pounds in weight. An exploratory incision failed to find anything abnormal about the stomach, duodenum, pancreas, gall-bladder, appendix or pelvic organs. The cæcum, ascending and transverse colon were greatly distended and the descending colon and sigmoid empty. The abdomen was closed and she was advised to have a short-circuiting operation. After consultation with her family this was agreed to, and the operation performed on January 7th, 1913. On December 9th, 1913, she writes that she is in good health, as well as she ever was in her life, and had not had any signs of her old trouble since leaving the hospital.

In this case I anastomosed the transverse colon with the upper sigmoid.

CASE 3. L. S., female, aged thirty-one, referred by Dr. Turner. Has suffered from chronic osteo-arthritis for seven years. The pain began in the arms and extended to the wrists, phalangeal joints and knees. There is limitation of movement. Back of right hand atrophied. Knees and wrists give a distinct cracking sound on movement. Is confined to bed. Treatment has not accomplished much. Constipation is a conspicuous feature of the case. I opened the abdomen on April 10th, 1913. Cæcum and

ascending colon much dilated. A distinct band was found running across the distal end of the transverse colon. The band was quite large and easily seen and felt. It was attached to the under surface of the transverse meso-colon, and passed over the colon and continued along the left border of the gastrocolic omentum. The colon was very much narrowed by this band, so much so that the obvious constriction caused by it seemed sufficient to account for the obstruction. The subsequent course of the case seemed to sustain this view. She left the hospital on April 27th. When discharged the constipation was less and her condition much improved. She had no pain whatever, the joints were not tender and could be moved freely. She could walk a little with support and without any pain. She continued to improve for six weeks when the constipation returned and, with the constipation, the pain in the joints.

She was readmitted on November 25th, 1913. Constipation extreme and the joints painful and tender. On December 4th, I reopened the abdomen. There was no recurrence of the band across the transverse colon but two new, distinct bands were found narrowing the lumen of the ileum at two points, one a few inches above the ileo-cæcal valve and the other situated in the left side of the true pelvis, crossing the ileum at about the junction of the middle with the lower third. Above the band was found the condition previously referred to, viz., for fully two feet on the proximal side of the band, the ileum was filled with large dry, scybalous masses. Both bands were divided and Lane's short-circuiting operation performed. For a time the improvement in the joints was considerable. The pain and stiffness recurred, however, and on February 5th, 1914, I removed the cæcum, ascending and transverse colon. It remains to be seen what the result of this last operation may be.

CASE 4. E. P., female, aged thirty-five, admitted to the Royal Victoria Hospital, May 7th, 1913, complaining of epigastric pain, vomiting, and pain in the feet and legs. Attacks of epigastric pain and vomiting had recurred at intervals since July, 1911, when she was operated on for acute appendicitis. Dr. Pirie reports a stasis of twenty-four hours at the lower end of the ileum, which is sixteen hours too long. There is a trace of albumin in the urine from the right kidney, and the physical signs are suggestive of tuberculosis of the right upper and left lower lobes. The abdomen was opened on May 28th, 1913. Stomach, duodenum, liver, gall-bladder, bile passages and pancreas all found normal.

The lower end of the ileum bound down and partially obstructed by adhesions. These were separated and the area carefully covered by peritoneum. Her symptoms were all relieved.

CASE 5. C. E., male, aged forty-four, admitted to the Royal Victoria Hospital, November 17th, 1913, complaining of pain in the back in the region of the sacrum, and of weakness. These symptoms followed an injury three and one half years ago. He was thrown from a horse and dragged. The radiograph showed the disease to be low down in the lumbar region. Six months before entering the hospital he had developed a psoas abscess on the right side, which was opened in Burlington, Vt. At present there is a discharging sinus on the right side and a prominent, unopened psoas abscess on the left side. This man was in the ward when Sir Arbuthnot Lane made his last visit, and he strongly urged short-circuiting. The man looked decidedly toxic. When I opened the abdomen I found the cæcum and ascending colon dilated, the transverse colon tied up at the hepatic and especially at the splenic flexures and, in the centre, dipping down into the pelvis. The descending colon and sigmoid were empty. I short-circuited the splenic flexure by anastomosing the ascending arm of the transverse colon with the upper end of the sigmoid. His convalescence was uneventful. The day following the operation his hands, which had previously been cold, were warm, and he expressed himself as feeling much better. On the fifth day after operation the discharge from the sinus ceased and had not recurred when he was last heard from. On December 21st last, he wrote me that he was well and felt like a new man. On January 31st, 1914, he was readmitted. There has been no occurrence of the discharge from the right side, but an increase in the size of the psoas abscess on the left side.

CASE 6. P. S., male, aged 43. Has suffered from stomach trouble for years. Gastro-enterostomy in Vancouver in January, 1908, not followed by much improvement. In March, 1908. Dr. Shepherd reopened the abdomen for persistent vomiting. The stomach was surrounded by a mass of adhesions. In January, 1910, Dr. Shepherd operated again and evacuated a mesenteric cyst. Vomiting continued and became a daily occurrence. The abdomen became more and more distended. He could not lie down at night. Constipation was a marked feature and difficult to overcome. The x-rays showed an almost complete obstruction in the transverse colon in the neighbourhood of the stomach, presumably by adhesions. On November 10th, 1913, I did Lane's

short-circuiting operation, attaching the end of the divided ileum to the side of the lower end of the iliac colon. Recovery was smooth and uninterrupted. He can now lie down at night. The abdomen is less prominent. He has gained thirteen and three-quarter pounds. There is a little tendency to diarrhoea. There is no vomiting.

CASE 7. R. C., female, aged twenty-two, admitted to the Royal Victoria Hospital complaining of chronic constipation and an ulcer on the leg. The administration daily of six ounces of pure liquid paraffin, three ounces of castor oil, three compound cathartic pills, and two or three cascara pills would not be sufficient to cause an evacuation of the bowel without the aid of an enema. Her hands and feet were cold and she had a toxic appearance. The hepatic flexure in this case was comparatively low and the splenic flexure high, pulled up, as expressed by Sir Arbuthnot Lane, by a shortening of the phrenocolic ligament. Proximal to the splenic flexure the large gut was greatly distended, the descending and iliac colon being even smaller than usual. I did a lateral anastomosis between the ascending arm of the transverse colon and the upper end of the sigmoid. Convalescence satisfactory. This girl has improved but the constipation, although less, is still troublesome.

CASE 8. M. H., female, aged twenty-seven, admitted December 30th, 1913, complaining of nausea, vomiting at intervals of a few days, and constipation. She had been operated on for appendicitis five weeks before admission. She also had a most severe form of pyorrhoea alveolaris. For the latter she was placed under the care of Dr. Peter Brown. Dr. Kaufmann, under whose care she had been before admission, had sent her into the hospital with the express object of having a short-circuiting operation for the obstinate constipation. Dr. Pirie found ileal stasis. Lane's ileosigmoidectomy was performed on January 13th, 1914.

CASE 9. L. P., male, aged twenty-six, admitted January 8th, 1914. He had a discharging sinus in the left groin, originating in the body of the third lumbar vertebra. The swelling in the left groin was first noticed about four years ago. It was opened by a doctor in New York. Again, in January, 1913, he was operated on in a New York hospital. A large incision was made in the left groin. The sinus, however, continued to discharge, and he was admitted to the Royal Victoria Hospital on the recommendation of Dr. W. F. Hamilton on October 4th, 1913 and discharged on November 27th, 1913. On his readmission in January, 1914, the

x-rays showed marked stasis in the colon. Lane's ileosigmoidectomy performed on January 20th.

CASE 10. C. G., male, aged twenty-six. Tuberculous disease of the third and fourth lumbar vertebræ, Christmas, 1911. Admitted to the Royal Victoria Hospital in August, 1912, and sent to Ste. Agathe in October, 1913. He was readmitted on December 6th, 1913. Sir Arbuthnot Lane saw him during his visit in 1912 and advised short-circuiting. The x-rays did not show any intestinal stasis and the operation was not done. On his readmission his condition was very bad. He had a double psoas abscess, one of which had been discharging ever since June, 1913. With a good deal of hesitation I decided to do Lane's operation which was performed on December 11th, 1913.

These results are suggestive. I think we may say that they justify a further trial in suitable cases.

This work opens up a new field. Three great questions present themselves. Does intestinal stasis produce degenerative changes in all the tissues of the body? Does it lower resistance to invasion by deleterious organisms? Does it seriously lessen recuperative and reparative power? Carrel's experiments demonstrating that tissues can go on living almost indefinitely if the drainage of their toxic products is carried off effectively, support an affirmative reply.

There is one more element that we must not forget, and that is the nervous element referred to by Sir Dyce Duckworth. Speeding up, the strenuous life, great affairs and great responsibilities must exert an influence on tissue metabolism. Sir Arbuthnot Lane has perhaps drawn attention to a physiological problem really greater than we yet appreciate. Changes have taken place in habits of life and changes in diet. We have studied the enemy in studying disease resulting from injury and infection, and with great benefit to mankind. It is quite possible that as great an advance may be made by directing attention to our defences. It would seem that the time has arrived for the physiological and pathological chemist, and that to him and his researches, carried on in close relationship with the clinician, we may look for further advancement in the solution of many of the difficult problems regarding the nature of many diseases.

We must not do Sir Arbuthnot Lane the injustice of thinking that he advises operative measures in all cases. Mild and early forms of intestinal stasis are sometimes relieved by milder measures. Mucus is the natural lubricant of the intestinal canal. When this

is insufficient, he sometimes uses paraffin and mechanical support of the abdominal wall. In his own words, liquid paraffin given before each meal "precedes the food in its passage along the canal and facilitates the effluent. As it cannot be absorbed it renders the motions fluid and ensures one or more evacuations daily. Its action as a lubricant is so remarkably efficient that it can meet many of the troubles that arise directly or indirectly from chronic intestinal stasis. Associated with the use of paraffin, a spring support which presses on the abdomen below the umbilicus acts very effectively in stimulating the intestines to pass on their contents, in preventing the puddling in the ileum which produces distention of the duodenum and stomach, in keeping up the transverse colon, cæcum and other viscera which prolapse, and in exacting a constant pressure upon the veins in the splanchnic area so preventing the accumulation in this situation and keeping the brain well supplied with blood."

When these measures fail, we have in short-circuiting a remedy that promises relief in suitable cases. We have not had any mortality in our cases and the operation may be regarded as comparatively safe. It seems quite clear that in this problem we have three definite and distinct factors to consider: first, digestion by the digestive fluids secreted by the stomach and intestine; secondly, bacterial digestion; and, thirdly, the mechanics, or the movements of the contents through the small and large bowels. Each has an important influence on digestion and tissue metabolism, and our operative procedure must be designed accordingly.

THE Solly Tuberculosis Society was formed at a meeting of physicians which took place at Colorado Springs January 24th, 1914. The society will meet each month and will discuss some particular phase in the treatment of tuberculosis. The first regular monthly meeting was held February 17th, when the question of the influence of altitude and climate in its relation to tuberculosis was taken up. A report was read on some experimental work recently done at Colorado Springs, which showed that nature attempts to increase blood platelets in tuberculosis, that blood platelets are one source of opsonin, and that at the altitude of Colorado Springs the blood platelets are increased.

ACIDOSIS

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ACIDOSIS, or acid intoxication, is never a proper diagnosis; it is not even a clinical symptom, or symptom-complex, but is in an exact sense, only a chemical fact, to be ascertained only by certain chemical means. This chemical state is, however, accompanied by certain symptoms, and it has been the endeavour of many experimenters to disentangle these symptoms from those that are caused by other chemical changes, which are usually proceeding in the body at the same time, and which are probably of even greater significance.

I hope you will bear with me while I strive to make clear to you what the biochemist means by acidosis.

If we take the purest possible water, we find that it conducts electricity very poorly. If we add salts or acids, its conductivity improves. Such conductivity as the water possesses depends, not on the molecules, H_2O , but on the presence of dissociated molecules. In pure water one ten-millionth of a gramme in every thousand breaks up into parts ions ($\text{H}_2\text{O} = \text{H} + \text{OH}$) the H bearing a positive electric charge, and the OH a negative. When we test such pure water with solutions of indicators, litmus, phenolphthalein, etc., we find that it leaves their colours unaltered; it is, we say, neutral in reaction. Any solution which contains more H ions than pure water will react to indicators as an acid, containing less as an alkali. We express the number of H ions in water 1/10,000,000 g in 1,000, as 1×10^{-7} .

A solution of pure sodium bicarbonate NaHCO_3 also may be thought of as undergoing dissociation into the ions Na, H and CO_3 . But the concentration of H ions (0.3×10^{-7}) is less than that in pure water. The solution is faintly alkaline, but not sufficiently so to give a red (alkaline) colour with phenolphthalein, one of our most delicate indicators. Na_2CO_3 , whose dissociation may be represented as Na, Na, CO_3 , is definitely alkaline. NaH_2PO_4 (acid) and Na_2HPO_4 will similarly dissociate, and in the blood these phosphate salts, with the carbonates, are the important elements in preserving the constancy of the H ion concentration of the body

fluids. The phosphates are possibly the more important, but in order to present a simple picture, I will leave them largely out of my subsequent consideration of this subject.

A solution of pure sodium bicarbonate, if left exposed in an open vessel, rapidly becomes definitely alkaline, and will redden phenolphthalein. The changes that a small part of the bicarbonate undergoes may be pictured as follows: $2\text{NaHCO}_3 = \text{Na}_2\text{CO}_3 + \text{H}_2\text{CO}_3 = \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$. The gas carbon dioxide, CO_2 , escapes into the air. If we place a bicarbonate solution, however, in a closed vessel into which we introduce some CO_2 , this change does not occur, since then we have the following. Some of the CO_2 dissolves in the water to form H_2CO_3 . Once the water is sufficiently saturated with this acid, the bicarbonate will be prevented from breaking up. The percentage of carbon dioxide gas in the air above a solution of sodium bicarbonate, which is sufficient to so saturate the water of the solution as to prevent the break-up of the bicarbonate, will depend on the percentage of bicarbonate in the solution. Apply these conceptions to respiration by the body. Let us think of the blood as consisting of a solution of NaHCO_3 and H_2CO_3 , the latter being kept at a constant level of saturation by the CO_2 in the air in the alveoli of the lungs. The atmospheric air contains only 0.04 per cent. CO_2 , the air left in the alveoli at the end of expiration about 5.2 per cent. This percentage in the alveolar air is sufficient to keep the blood so saturated with H_2CO_3 that there is about one part of this gas for every ten to eleven parts of NaHCO_3 . Now if one does forced breathing for two or three minutes, the percentage of CO_2 in the alveolar air will fall greatly, and in consequence that of the H_2CO_3 in the blood will also fall, the CO_2 being given off through the lungs; and in consequence, some bicarbonate will break up, being converted into carbonate with less of CO_2 ; the blood will become more alkaline, the H ion concentration will fall. Any change, especially any sudden change, in H ion concentration affects the respiratory centre, a decrease, as in this case, decreasing its activity. And, as is well known, after forced breathing there is a period of apnoea, a lack of desire to breathe. If the breath be held, on the other hand, the percentage of CO_2 in the lungs rises, as also that of H_2CO_3 in the blood stream; the H ion concentration increases and a great desire to breathe is followed by rapid respiration.

Now, let us consider what must occur if an acid is produced in quantities in the body, or introduced into its blood stream. Take the case that we are injecting intravenously a weak solution of

hydrochloric acid, HCl. Then the equations may be thought of as running as follows: $2\text{NaHCO}_3 + 2\text{HCl} = 2\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$. The CO_2 will escape through the lungs, and the solution will become neutral. The addition now of more HCl would result in acidity. Only one ten-millionth of a gramme of water in a thousand dissociates; one thirty-millionth of NaHCO_3 in one thousand dissociates, but in a dilute solution of HCl more than 90 per cent. dissociates, so that as soon as the HCl is in excess, there is a great number of free H ions.

This may be illustrated by the following table, showing the results in an experiment¹ which was performed under the following conditions. A thousand grammes of NaHCO_3 was dissolved in a hundred litres of water, and placed in a closed vessel, above which was an atmosphere containing one gramme of CO_2 in a litre. Some of the CO_2 , as explained above, will dissolve in the water. Into the solution HCl was run, and the first column shows the amount of HCl in grammes added. As the CO_2 could not escape from the vessel, the pressure of CO_2 rose, and more H_2CO_3 was dissolved in water, and consequently the ratio of H_2CO_3 to NaHCO_3 rose.

HCl in grammes	H ₂ CO ₃	Ratio :	NaHCO ₃	H ion concentration
0.	2.27		11.9	0.57 10 ⁻⁷
10.	2.27		11.5	0.59 10 ⁻⁷
50.	2.27		10.	0.68. 10 ⁻⁷
100.	2.27		8.2	0.83 10 ⁻⁷
200	2.27		4.4	1.54 10 ⁻⁷
250	2.27		2.6	2. 6 10 ⁻⁷
300	2.27		0.68	10.00 10 ⁻⁷
310	2.27		0.31	22.00 10 ⁻⁷
318	∞		0.	10 ⁻⁷

It will be seen that the H ion concentration changed very slowly at first. Not till between 100 and 200 grammes of acid were added was the neutral point, H ion concentration 1×10^{-7} , passed. Not till more than 310 grammes were added, was there free HCl, and with this point a great jump in H ion concentration occurred, owing to the great dissociation of hydrochloric acid. In this experiment the CO_2 was not allowed to escape. In the body it would escape through the lungs, and in consequence, it would

take much longer for the neutral point to be reached. This loss of CO_2 is therefore one of the body's first defences against the danger of acidosis.

This mechanism is, however, by no means the only defence. In the body, any tendency to acidosis tends to convert the Na_2HPO_4 of the blood stream into the acid salt NaH_2PO_4 . The blood is, as we have shown, alkaline, containing Na_2HPO_4 rather than the acid salt. Yet the urine is acid. The kidney continually removes acid from the body. This is a great defence.

In the equation represented above, $\text{NaHCO}_3 + \text{HCl} = \text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$, the sodium chloride produced would also be removed from the body by the kidneys. This excretion of neutral salt and acid phosphate, as well as carbonates and other normal acid constituents from the body as salts tends, as may be seen, to decrease the amount of the fixed bases, sodium, calcium, potassium, and magnesium, in the blood and tissues, and should large quantities of acid be introduced into the body, it would form a veritable danger owing to loss of these bases alone, as their excretion would exceed their absorption from the food. Against this danger, the human body is also in part protected. Whether the urea excreted is normally produced in the body from ammonium carbonate or not we hardly need to discuss. As a fact, we find that when acid is poured into the blood stream, less urea and more ammonium salts are excreted in the urine. This may be expressed in equation form thus: $\text{CO}(\text{NH}_2)_2 + 2\text{H}_2\text{O} = (\text{NH}_4)_2\text{CO}_3$, $(\text{NH}_4)_2\text{CO}_3 + 2\text{HCl} = 2(\text{NH}_4)\text{Cl} + \text{CO}_2 + \text{H}_2\text{O}$. This is a most important protective mechanism in all carnivorous animals, man included; but although it does much to prevent the body alkali being lost in the form of salts, we find that when an acid pours steadily into the blood from any source, there is at first a very definite loss of fixed bases. Indeed, the poorer the body becomes in fixed base (Na, K, Ca, Mg), the more efficient a part the ammonia seems to play. Hence it is that estimations of the ammonia content of urine throw some light on the condition of a patient who is being poisoned with any acid.

The character of the acid produced or injected into the body produces, however, important differences in the character and amounts of base lost. Luithlen,² for instance, showed that rabbits fed on a constant diet, when poisoned with hydrochloric acid lost sodium, potassium, calcium, and magnesium. There was a gradual demineralization, but the losses of sodium and potassium were greater than that of the other bases. Animals poisoned with oxalate seem to suffer more markedly from a loss of calcium.

If the word *acidosis* be only used in a restricted sense, such condition only supervenes when the H ion concentration rises above that of pure water, namely 1×10^{-7} . This probably only occurs, in man, in the severest types of diabetes. In a wider sense, the word may be used of any case where the H ion concentration rises above the normal, which is about 0.44×10^{-7} .

The physiological conditions in which this increase in H ion concentration most frequently occurs is undoubtedly that of hard muscular work. In this case, the metabolism of the muscles is far from complete, and considerable amounts of lactic acid appear in the blood stream, increasing the hydrogen ion concentration; and this is one, at least, of the causes of the increased respiration that occurs. This increase of lactic acid production undoubtedly in part explains the soreness of the muscles which may supervene. It is found, too, that under these circumstances, there is a greater calcium loss than is usual, and this factor may, in part, account for the soreness, as it seems to do in the stiffness of oxalate poisoning.

In starvation there is a disturbance of metabolism such that there is a marked increase in the excretion of acetone, β oxybutyric and aceto-acetic acid, and a relative acidosis.

In the milk sickness of cattle and sheep, as well as in man, this too seems an important factor.³

It is in diabetes mellitus that we find the most marked changes in H ion concentration. Though exact and direct measurements to show this are difficult, and the results so far obtained are not numerous, there seems no doubt that it occurs, and in some cases to such a marked degree that the H ion concentration rises at least to that of pure water, or even higher. We have important confirmatory evidences of this change: the first, and least important, being the great increase in ammonia in the urine; the second, the change in the CO₂ content of the alveolar air. It will perhaps be profitable to examine this more at length; and to introduce certain technical methods of expressing this change, which are being commonly employed at the present. The total atmospheric pressure or tension, 760 mm. of mercury, is the sum of the tensions of the various gases in the atmosphere. As oxygen forms some twenty per cent., its tension is 158 mm., and as only 0.04 per cent. CO₂ is present, its tension is only 0.3 mm., the balance, 601.7 mm., being due to nitrogen and water vapour. In the air in the alveoli, the percentage of oxygen is only 15.4, the tension being 120 mm. The CO₂ is roughly 5.2 per cent., with a tension of 40 mm. If

one ascends a high mountain where the atmospheric pressure is less, the pressure in the alveoli will also be less. Were the percentage of CO_2 in the lungs to remain the same, its pressure would be less; and in consequence some of the H_2CO_3 of the blood stream would break up, and the percentage of this acid in the blood and the hydrogen ion concentration would fall; and, as may be seen, the character of the respiration would change. The changes, however, do not take place in this way. The body, probably through the kidneys, tends to keep the H ion concentration constant, and we find that respiration so changes that instead of the percentage of CO_2 in the lungs remaining the same, it increases until its pressure reaches that under normal atmospheric pressure, namely, 40 mm. There is a decrease in the ventilation of the alveoli. This may be brought about by a change in rate or in depth or in a combination of these. The point is that it is the tension of CO_2 in the alveolar air, and not its percentage, which varies with the H ion concentration of the blood. Kennaway, Pembrey and Philips⁴ have clearly shown that in starvation this CO_2 tension falls as the excretion of acetone bodies rises, and in diabetes this fall is always a precursor of coma, and may reach extremely low figures in fatal cases of coma. Such a fall undoubtedly means a very marked rise in H ion concentration and a marked decrease in the NaHCO_3 and Na_2HPO_4 of the blood stream.

Such are the chemical facts. Can we refer any of the symptoms of acid intoxication to this rise in hydrogen ion concentration alone? This question it is impossible to answer as it stands, since hand in hand therewith the change in CO_2 tension in lungs and blood stream, and the decrease in fixed base occur. They are, indeed, the opposite side of the same chemical picture. The question is then best worded: Can we refer any of the symptoms of an acid intoxication to the rise in H ion concentration, the change in CO_2 tension, and the decrease in fixed base in the body? All types of acid intoxication seem to show some muscular pains and stiffness, a subnormal temperature, and some mental dullness, which is preceded by weakness, and some change in respiration (lung ventilation). Symptoms due to these causes one should be able to relieve by the injection of sodium carbonate or bicarbonate. The simply wonderful temporary recovery that many patients make when showing serious symptoms of diabetic coma, when this procedure is resorted to, may be taken as a proof that these changes are in large part responsible for the production of coma. Kennaway, Pembrey, and Poulton administered large doses, 600

grs., to a diabetic patient whose alveolar CO_2 tension was below normal, 31 mm., and as a result the CO_2 tension rose greatly, to 37·8—40 mm. This serves to emphasize how necessary this treatment is. Large doses of bicarbonate or carbonate are necessary. Magnus-Levy⁵ from the analysis of the body of a patient who died of diabetic coma, estimated its content of β oxybutyric acid as 1·5 g. per kilo. Such a quantity would, in the case of a man of a hundred and thirty-two pounds, require almost 3 ounces of NaHCO_3 or 5 ounces of carbonate to neutralize it. Sodium carbonate, if injected subcutaneously, usually causes necrosis. Bicarbonate solutions, if sterilized, lose so much CO_2 that they are largely converted into carbonate. Magnus-Levy⁶ has suggested that such a solution of 40 grammes of bicarbonate in one litre of water, and containing a little phenolphthalein as indicator, should be changed back to bicarbonate by bubbling through it CO_2 . When the red alkaline colour fades, it may be injected without producing necrosis, or may be given in large amounts intravenously, when, indeed, it improves the action of the heart and the general circulation.

The fact, nevertheless, remains that we cannot certainly as yet refer diabetic coma to acidosis and its accompanying conditions alone. First, coma comes on relatively rapidly, even when patients are taking large doses of bicarbonate, and even, according to Van Noorden,⁷ when the urine is alkaline. Secondly, intravenous infusion of carbonate often gives a very temporary relief. Whether in these cases not enough has been given or not, we do not as yet know. In no such case has the degree of acidosis been accurately estimated. Thirdly, symptoms resembling diabetic coma in all respects, unconsciousness, marked expiratory dyspnoea, fall in blood pressure, and weak pulse, have been produced in animals by Ehrmann⁸ and his pupils by giving *per os* or intravenously large doses of sodium butyrate, oxybutyrate, and aceto-acetate. In his experiments, neutral salts have produced the symptoms. It may be noted in parenthesis, that he has shown that in these animals there is a fall in CO_2 tension, though he fails to show how neutral salts can produce this effect; and he has not proved that there is no acidosis. Consequently, we are led to look for a further explanation, and this, it seems to me, is suggested by the fact that all these acids are relatively good precipitants of calcium. In the early stages of acetonemia there is a relatively great loss in this base. We may assume that a diabetic patient excreting acetone is soon poor in it. Such an assumption accords with the

findings of Luithlen, Chiari,⁹ and others, that when an animal is poor in calcium, it is more liable to moist eczema and various erythemata. It will also be more liable to boils, etc. These, we know, occur not uncommonly in diabetes. Certain disturbances, too, of the balance between calcium and the other salts will account for muscular pains, weakness, and even coma. All these symptoms we find also in poisoning by oxalate, another precipitant of calcium. It may well be that an excessive lack of calcium as compared with the other bases not only comes on during the feeding of sodium bicarbonate, but is even aggravated by it; and that relatively suddenly the dread symptoms appear, even if there be no acidosis.

There remain but two types of acidosis. Neither of these require a lengthy discussion at present. First, the relative acidosis that occurs when there is respiratory trouble, and accumulation of CO₂ in the lungs, alveoli, and blood stream. This is rarely severe, and its chief symptom is dyspnoea, though in some cases muscular stiffness and aching are complained of.

Secondly, Lewis¹⁰ and his co-workers have described a type of acidosis in certain cardiac patients, which in its purest form has as its chief symptom marked dyspnoea without cyanosis. Using a method for indicating acidosis devised by himself, Barcroft thinks that he can show that these patients suffer from acidosis. Yet there is no abnormal constituent in the urine or blood (lactic acid or acetone bodies) to indicate a metabolic derangement. They consequently suggest that there is probably a derangement of kidney function such that the acid bodies usually excreted are not got rid of in a normal fashion.

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THE MENTALLY DEFECTIVE

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THE story of the treatment of the feeble-minded is the story of any great movement where the opinions of man vary from one century to another. It is a history of persecution followed by kindness and training, to be followed again by persecution. Among the ancients, mental defectives were objects of derision, aversion and persecution, were without rights or privileges, accursed of the gods. They were allowed to perish or as was done in Sparta, were got rid of by exposure or violence. Among the Romans, and until recently among certain South Sea Islanders, this custom was prevalent. Some escaped, although plainly set apart and hedged about by ridicule or scorn, or tolerated only for the sake of diversion and amusement. Others again reached exalted positions as Nero, Commodus and Elagabalus, three wearers of the imperial purple.

With the dawn of Christianity the first gleam of beneficent commiseration and divine pity appeared on the horizon; the most notable leader in this movement being the good bishop of Myra—the St. Nicholas of the children to-day—whom we find recognizing and tenderly caring for the idiot and imbecile. In mediæval times, as fools and jesters, they had the freedom of the castles of the great, or regarded as “les enfants du bon Dieu,” they wandered unmolested in Europe as well as in the Orient. Again viewed with superstitious reverence and even fear, as being mysteriously connected with the unknown, the house into which an imbecile was born was considered blessed of God. Even to-day among the Turks and in many parts of Brittany and Brazil this extravagant idea regarding these “innocents” prevails.

Confucius and Zoroaster in their writings both enjoin a tender care of these unfortunates and the Koran gives this special charge to the faithful, “Give not unto the feeble-minded the means which God hath given thee to keep for them, but maintain them for the same, clothe them and speak kindly unto them.”

In the days of the Reformation, however, the pendulum

swings the other way with resulting persecution and we see Martin Luther and Calvin denouncing them as "filled with Satan."

During the seventeenth century we find recognized effort being made to help the mental defective at the Bicêtre, the present large asylum and hospital in Paris. Among those who carried on this movement to aid these poor unfortunates were Boerhaave, at the University of Leyden; Morgagni, University of Padua; Rousseau and Péreire, the latter being the first to evolve the power of oral speech for the deaf mute. Next we find Itard, Esquirol, Ferrus, Voisin, Sequin, Vallée and others all engaged in finding the best means of training mental defectives.

To Sequin we owe the greatest debt as it was he, working in his own private school and also at the Bicêtre, who put the training of the feeble-minded on the basis it occupies to-day, and whose book, "The Theory and Practice of the Education of Idiots", is still recognized as an authority on such work. The results of Sequin's experience, the necessary requirements and the programme of education, are briefly embodied by him in the following abstracts. The necessary conditions for the improvement of imbeciles are that "the treatment be not only hygienic but moral; that the education be not putting in action of acquired faculties, which is the education of common schools, but the development of the functions, of the aptitudes, of the faculties, and of the instinctive and moral tendencies."

France, the country that provided such men as Péreire, Rousseau, Itard and Sequin, is still years behind other nations in providing for the care of mental defectives. In other countries we have to mention Howe of Boston, Saegert in Germany, Reed in England, and Guggenbühl in Switzerland. The latter is noted on account of his famous experiment with the cretins of his native land. In Germany many of the states took up the question with enthusiasm and founded large institutions for the care of the feeble-minded. The articles of Dr. Wm. Twining, in England, on the work being accomplished at the Abendberg, Germany, led to the establishment of, first, Essex Hall and, finally, the magnificent institution at Earlswood where five hundred inmates can be taken care of.

Sequin had been forced to leave France and went to the United States where his work and enthusiasm, along with the efforts of Howe, in Boston, and others, led to the founding of many private and state institutions where the feeble-minded are properly looked after, with the result that instead of being a charge and a menace

to the state, they are often able to pay their own way. Among such institutions are the Training School for the Feeble-minded at Vineland, N.J., the Pennsylvania Training School for Feeble-minded Children at Elwyn.

In Canada very little has been done for the mental defective, and in our own province of Quebec, it does not need the trained eye of the expert to see that there are large numbers of these poor unfortunates who are a menace to the stability of the country, and I have no hesitation in saying that it would be cheaper for the province to have institutions to look after them than to have them roam at large as at present. There is only one training school in Canada and that is the one at Orillia, Ontario.

CLASSIFICATION. Mental deficiency, or amentia, is a state of mental defect from birth, or from an early age, due to incomplete cerebral development, in consequence of which the person affected is unable to perform his duties as a member of society in the position of life to which he is born (Tredgold).

Mental defectives are divided into three classes, idiots, imbeciles, and morons. This classification is the one adopted by the American Association for the Study of the Feeble-minded and the terms are those usually employed in this country. In place of the term "moron" the English use the word "feeble-minded" and the French "débile." The definitions of these three classes as adopted by the above named association are as follows:

Idiots are those so defective that the mental development never exceeds that of a normal child of about two years.

Imbeciles are those whose development is higher than that of an idiot, but whose intelligence does not exceed that of a normal child of about seven years.

Morons are those whose mental development is above that of an imbecile, but does not exceed that of a normal child of about twelve years.

The definitions suggested by the Royal College of Physicians of London, and adopted by the Royal Commission on Feeble-minded were:

An idiot is a person so deeply defective in mind from birth, or from an early age, that he is unable to guard himself against common physical dangers.

An imbecile is one who, by reason of mental defect existing from birth, or from an early age, is incapable of earning his own living, but is capable of guarding himself against common physical dangers.

A feeble-minded person is one who is capable of earning a living under favourable circumstances, but is incapable from mental defect existing from birth, or from an early age, (1) of competing on equal terms with his normal fellows, or (2) of managing himself and his affairs with ordinary prudence.

Further, all the above classes are divided into three sub-classes, high, medium and low.

ETIOLOGY. When discussing the etiology of mental deficiency, one cannot say dogmatically that there is one cause, in view of the countless influences of heredity, environment and accident enveloping the human organism from the moment of conception to that of dissolution. However, for purposes of classification mental deficiency can be more or less accurately divided into primary and secondary deficiency. Primary deficiency is the result of morbid heredity, such as mental deficiency itself, insanity, epilepsy, alcoholism and tuberculosis. Secondary deficiency is the result of environmental conditions under which we may note certain diseases of the brain as epilepsy, vascular and toxic conditions like trauma, asphyxia, infectious fevers, polio-encephalitis, sunstroke, tuberculosis and syphilis. Then there is defective nutrition of the brain as seen in cretinism or those cases where the deficiency is due to the loss of one or more of the senses.

The all-important cause of mental deficiency is morbid heredity, but one must not forget that the environment of to-day is the heredity of to-morrow, and the statement that the sins of the fathers are visited upon the children unto the third and fourth generation is an undoubted and important physiological truth. Further, a condition of ill health, actual disease, or starvation of the mother cannot but be injurious to the growing embryo, and the same may be said of improper food, impure air, deficient light and inadequate sleep, which are so often the lot of young children in our city slums.

Two studies on the cause of mental deficiency have been made. One of 2,380 cases, a collaboration of Drs. Beach and Shuttleworth, from the books of the Darenth and the Royal Albert Asylums in England, and the other of 3,050 cases compiled by Dr. Barr from various sources, but chiefly from the records of the Pennsylvania Training School. A comparison of these tables shows an agreement as to the order of periods, the predominating influences in both being found before birth, next in the period after birth, whereas the least are those operating at birth. Dr. Barr's table shows 64·85 per cent. of the whole in the first, 32·23 per cent. in the second, and only 2·92 per cent. in the last named. In regard

to causes acting before birth, the English table shows the largest percentage in the abnormal condition of the mothers during gestation, a record of 711 cases, or 29·87 per cent. The American table places this cause second, 259 cases, or 8·49 per cent., but finds its largest percentage in an heredity of imbecility, 835 cases or 27·38 per cent., which ranks third in the English table, 117 cases or 4·69 per cent. This divergence, as Dr. Barr explains, is more apparent than actual. The high percentage in the English table is ascribed by Dr. Beach to the low physical and mental condition of the parents, in other words the parents were on the border-line of imbecility, a condition easily intensified by poverty and frequent intemperance. Similarly, exhausted vitality due to the excitement of competition, so marked in America, has doubtless contributed to both the first and second causes of Dr. Barr's table.

Tredgold says that 80 per cent. of the persons suffering from the severer grades of amentia were descendants of a pronounced neuropathic stock; in 64 per cent. the heredity was in the form of insanity or epilepsy; in 18 per cent. it consisted of a marked family tendency to paralysis, cerebral hæmorrhage or various neuroses and psychoses. The remarkable history of the Jukes, the Kallikak family and the "Tribe of Ishmael" shows the terrible effect that heredity has on one generation after another. Barr says that the evidence shows, "that the transmission of imbecility is at once the most insidious and the most aggressive of degenerative forces; attacking alike the physical, mental and moral nature, enfeebling the judgement and will, while exaggerating the sexual impulses and the perpetuation of an evil growth, a growth too often parasitic; ready to unite with any neurosis it may encounter, and from its very sluggishness and inertia refusing to be shaken off; lying latent, it may be, but sure to reappear, as Haller recounts, through a century to the fourth and fifth generation."

In regard to the condition of the mother during gestation, Langdon Down, Howe, Tredgold and others all think the mental and physical condition of the mother during pregnancy of great importance. To illustrate this I may mention the results found by Baron Percy, the famous French military surgeon, and Dr. W. B. Carpenter who examined the 92 children born after the siege of Landu in 1793, all of whose mothers were exposed to the horrors of the siege; 16 died at birth, 8 were idiotic or died before they attained the age of fifteen years, 33 more or less defective died within ten months, and 2 were born with fractured limbs.

We will now briefly discuss the other causes: *Tuberculosis* is

undoubtedly a strong contributing factor, but rarely the direct and sole cause. It coöperates readily, in an enfeebled constitution, with any latent neurosis and in this way may cause mental deficiency. *Alcoholism*, like tuberculosis, is more usually a contributing factor than a direct cause. It must also be remembered that alcoholism is often the result of mental deficiency and not the cause. *Syphilis* is not a frequent cause of amentia. It is probable, as stated by Mott, that "there would undoubtedly be a considerably larger proportion of defective children from this cause, were it not for the high rate of sterility, miscarriages, still-born and short lived offspring that it produces." Syphilis may be truly hereditary by impairing the vitality of the germ or sperm cells, so that perfect development cannot take place, or it may be congenital, the actual disease being transmitted to the child through the maternal tissues. Statistics do not prove that *consanguinity* is an important factor in producing feeble-mindedness, provided that both families are devoid of any hereditary taint; in fact Langdon Down says, "I am by no means sure that by a judicious selection of cousins the race might not be improved." I shall not say much in regard to the other causes. Difficult labour, asphyxia in the new-born child, injuries before and after birth, infectious fevers, meningitis, malnutrition and convulsions all have a bearing in the production of mental deficiency.

PATHOLOGY. Apart from the malformations, such as absence of the corpus callosum, porencephaly, hydrocephalus and sclerosis, the pathological findings in a case of amentia are numerical deficiency, irregular arrangement, imperfect development and pigmentation of the nerve cells; diminution of the fibres, especially in the outer line of Baillarger and in the frontal and parietal lobes; and an overgrowth of neuroglia. Incompletely developed nerve cells occur in all layers, but mostly among the medium and small pyramidal cells of the second and third cortical layers. In view of the fact that these cells are normally among the last to attain their full development, also that they are the earliest and most affected in dementia resulting from epilepsy and chronic insanity, this fact is of considerable interest. The area most affected is the prefrontal and next the parietal.

PHYSICAL CHARACTERISTICS. I shall only attempt to point out the most common physical characteristics. In examining a child for mental deficiency one notes any defects of the ears, as anomalies of size or shape; defects of the eyes, nose, lips and tongue. Especially in mongolism one finds a large, flabby and fissured tongue.

In the osseous system abnormalities of the skull as regards size, shape, asymmetry and bosses will be found. The palate is usually saddle or V-shaped. The jaws may be small and receding or occasionally protruding. Primary and secondary dentition are often delayed and there may be irregularities of position, number, form, size and condition of the teeth.

The circulation may be feeble as evidenced in cyanosis, sub-normal temperature and a tendency to chilblains.

MENTAL CHARACTERISTICS. There are three elements necessary for sensation: a peripheral sense organ, a transmitting nerve, and a central receptive ganglionic area. As has been shown in discussing the pathology of mental deficiency the chief cause of sensory imperfection is the defect of the third element or a central ganglionic area. Vision may be affected owing to errors of refraction, old corneal ulcers, strabismus or nystagmus. Hearing is often defective in one or both ears owing to a congenital defect or inflammation of the middle ear. The cutaneous and muscle sensibility is impaired, and this impairment increases with the degree of amentia.

Attention is always below par although often voluntary, in contrast to involuntary attention which is present in a large number. Owing to either poor attention, faulty perception, or both, association and memory are very poor. Mental defectives are unable to describe from memory. Usually imagination is very defective, but in some defectives there is considerable as shown by their skill in drawing. Ideation, on account of defects in attention, perception and memory is limited. Their life is one of perceptions, not of conceptions. Judgement and reasoning are very defective. The moral sense is generally lacking, to a greater or less degree.

The temperament of these patients may be one of four kinds: (1) choleric, where the excitability is great, and the after-effect is great; (2) sanguine, where the excitability is great, and the after-effect is small; (3) phlegmatic, where the excitability is small, and the after-effect is small; (4) melancholic, where the excitability is small, and the after-effect is great. Most mental defectives are phlegmatic, some are sanguine and a few, chiefly of the mildest grade, are melancholic.

Owing to the generally diminished excitability of the nerve cells there is deficiency of movement; the child never cries, sucks, nor looks about him like an ordinary child and is backward in attempting to sit up, stand and walk. In contrast to this we may find excessive movement where there is a chattering, ceaseless

activity which usually develops into tics. There is also often incoördination of movement; the child is awkward in handling himself or objects.

Defects of speech are common. The attempts at speech are late in appearing, the child may be seven or eight years before attempting to say the simplest words and then it is very poorly done. There may be echolalia, a tendency to repeat words or phrases spoken by others, or coprolalia, a tendency to repeat foul language.

DIAGNOSIS. The diagnosis of mental deficiency is often very difficult, except in the severer grades, and the physician must be very careful before pronouncing a child feeble-minded.

The history of the patient must be most carefully enquired into, for several generations back, on both the maternal and paternal side, for any trace of feeble-mindedness, insanity, alcoholism, tuberculosis, epilepsy, or any neuropathic taint. Next, the history of the child must be thorough, both before and after birth. What was the condition of the mother, physically and mentally, during gestation; was the child born with or without instruments, and was it a hurried or a protracted labour. How many children did the mother have before the patient was born and were there any miscarriages. After birth did the child have any illness, convulsions, or accident. When did he have his first teeth, when did he begin to talk and walk; was he properly nourished during infancy.

After taking the history, a complete physical examination should be made. The skull should be measured and any asymmetry, bosses, or other abnormalities noted. The ears and eyes should be examined for any defect in hearing or vision and for any anomalies of their physical characteristics, any difficulty in walking, standing, holding objects in the hands or any other incoördination should be looked for. Finally a careful examination of the heart, lungs, and kidneys should be made.

For children over three years of age tests can be made of their mental capacity. There are several different kinds of tests employed, but the one most used and recognized as the best is the set devised by two eminent French physicians, Binet and Simon. These tests have lately been revised in order to meet with our increasing knowledge of feeble-mindedness. The tests consist of graded questions for children from the age of three years to fifteen years; questions which Binet, after many experiments with normal children, found to correspond to the different ages. I shall not attempt here to explain these tests, as they can be found in any

book on this subject, but they test every part of a child's mental capacity.

It must be understood, of course, that these tests are not absolutely accurate, but they enable us to divide children into more or less clearly defined classes, and in this way we are able to get a clearer view of mental deficiency. They enable us to determine the child's intellectual level. Certain important practical data are obtained concerning the child's ability to read, write, draw, and use language, numbers, money, etc. Also the tests open up the case for varied observation, giving the examiner opportunity to make supplementary notes of the child's attitude, his emotional condition, his speech, movements and various other characteristics of his responses and conduct.

As a rule a child showing three years or more retardation is feeble-minded, but not necessarily so. The amount of intellectual retardation may sometimes be very slight and yet the mental defect may be very grave, fundamental and incurable. Prognosis must therefore be reserved in such cases. Some of these less retarded cases are more distinctly of the feeble-minded kind than some showing three or more years of intellectual retardation.

Mental deficiency is a defect of the higher centres, not a disease. Therefore, there is no cure for it. Improvement, however, and often great improvement, can be obtained by suitable training and treatment.

TREATMENT AND TRAINING. The first thing to be done in the treatment and training of mental defectives is the testing of the various sense organs so that any defects may be remedied by surgical or medical treatment. In this way any errors of refraction in vision, any defect of hearing, taste and smell or enlarged tonsils and adenoids would not be overlooked. After this the training can be commenced. Naturally the only proper place for the feeble-minded is in an institution situated in the country and surrounded by enough land to enable the patients to pursue an open, healthy life, and to give industrial employment to them. All the training must be done through the senses and every sense must be stimulated to its physiological limit. Until the age of seven the physical side alone should be attended to and not before seven should any education be attempted, not even kindergarten work, although this may be modified in individual cases. The muscular and tactile sense should be especially developed, as often improvement may be obtained through these channels when the other senses are not responsive. Education by classes is much better

than individual tuition as imitation plays an important part in the life of children. All attempts at "cramming" should be avoided. Industrial training and household occupations are very important in the training of the senses, and these along with musical and military exercises will do much to improve a feeble-minded child.

The best method from the standpoint of training through the senses is the Montessori system, devised by an Italian doctor and psychologist. The fundamental principles of the system are the complete liberty of the child in its spontaneous manifestations and the utilization of every action of its natural energy. The child is taught to think and act for himself. The teaching is almost entirely individual and the three fundamental rules for lessons are that they shall be brief, simple and objective. No superfluous words must be used in giving the lesson, since they tend to confuse the child and to distract his attention from the main point, and the teacher must not insist on the repetition of a lesson against the child's inclination, and she must not let the child know that he has failed or has not understood.

SUMMARY. Mental deficiency is a defect of the brain, not a disease. It cannot be cured, but the condition of the child can be improved to a greater or less degree by careful and suitable treatment and training. The greatest etiological factor is heredity; other important factors are the condition of the mother during gestation, tuberculosis, alcoholism and injuries after birth.

All mental defectives should undergo a thorough medical examination and any defect in vision, hearing, or enlarged tonsils and adenoids corrected. Training should be carried out in institutions, and the teaching should be objective.

The problem of our feeble-minded children is one which must soon be considered by every province in Canada. It is a vital and one of the most important elements in determining the stability of any country; it is a factor which attacks the very foundations of a nation. Segregation, which will prevent procreation and enable us to give every feeble-minded person the proper treatment and training, is the only solution.

ON THE DESTRUCTION OF SEBACEOUS GLANDS, SWEAT GLANDS, AND HAIR FOLLICLES, AND THE DISEASES THEREBY CURED

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A NEW drug to a medical man is like a new golf club to an old golfer, or a new tool to an experienced workman. It is always of interest, and yet it is not trusted till it has proved its value. As the skilled workman could get on very well without the new tool, so can the doctor without the new drug. As the artisan becomes skilful in the use of his new tool, so does it become valuable and even indispensable to him, but if he acquires no skill in its use, he says it is useless, and discards it. So are *x*-rays in the hands of the medical man for the cure of certain diseases of the skin. He can get on very well in some diseases of the skin without *x*-rays. I take, for instance, ringworm. For generations the family doctor has cured this disease by remedies which vary from writing ink to strong sulphuric acid. Yet the number of the remedies is a proof that none of them is a sure and quick method, and no one would promise a cure in, say, a month, with the whole pharmacopœia at his command.

In such a case a remedy which will produce a cure—not in one or two or three months, but in exactly four months, may be called a specific for the disease. Such a remedy is to be found in *x*-rays, and in *x*-rays alone. Yet it is not possible for any medical man to apply this remedy without experience and practice in the use of *x*-rays. The subject of this paper is to show why certain diseases of the skin are cured by *x*-rays, and to lay down certain laws for use in the application of the rays.

X-rays have no selective action on diseased cells, but they can destroy every kind of living cell. An analogy can be made to the action of heat on a melting-pot containing bits of lead and iron. At a low temperature the lead will melt, and at a higher temperature the iron will melt, but the heat has not a selective action on the lead, which it melts before the iron. So in the skin there are quickly-growing cells which represent the lead, and slowly-growing

cells, which represent the iron, and by giving a moderate quantity of x -rays the quickly-growing cells are killed, and by a larger dose the older cells are killed. The quickly-growing cells are at the roots of the hair follicles and in the glands of the skin, and these are the first to be killed by x -rays.

As the growing cells of a baby's body are more easily killed than the comparatively stationary cells of the adult's body, so the cells of the adult's body which are undergoing karyokinetic division, are more easily killed than the stationary cells beside them. The karyokinetic cells in the adult are found in the cells of glands, hair follicles, and malignant cells. The diseases of the skin most amenable to x -ray treatment are those in which the disease thrives owing to the presence of the more active cells in the skin, viz., the sweat glands, the hair follicles, and the sebaceous follicles, and of abnormal quickly-growing cells, as in rodent ulcer. The action of x -rays may be compared to that of a blow. A small dose is like a tap which calls forth reaction and acts as a stimulant. The next is the knock-out blow, which causes temporary stunning of the cells and temporary cessation of growth. The next is practical destruction, some cells escaping death, while others are killed. Finally there is total destruction of all cells.

X -rays, in small quantity, stimulate all the cells of the skin, and this causes increased activity of active cells, thus causing increased growth of hair and increase in perspiration. I have noticed this increased growth of hair in cases where the neck has been treated for tuberculous glands. In such a case the face was protected against the rays by a sheet of lead. As the treatments were given by small doses two or three times a week, the position of the protective lead suffered a slight variation at each treatment. Thus the skin received a graduated dose, from zero, where the skin was always totally protected, up to the maximum, where it was never protected. A photographer would call this vignetting, and at a special part of the vignetted area of the skin, the hair follicles were stimulated, the hair grew faster, and this patient, who was a lady, had a little bunch of hairs on the side of her face, which rather annoyed her. When the treatments were stopped, the hairs ceased to grow, and after the lapse of a year, when I next saw her, there was no indication of the previous overgrowth of hair. All through the treatment the downy hair, which grew unusually long, retained its downy character, so that by cutting the hairs short with scissors, it presented the same appearance as the rest of the downy hair on the lady's face.

In the treatment of cheloid this stimulating action of x -rays is made use of. When the rays fall on the hair follicles in larger quantity the knock-out blow is delivered. The hair ceases to grow for two months; it is shed, and a new hair grows, because the hair follicle was stunned only and not killed. This is the treatment carried out for ringworm, sycosis, and alopecia areata. In this treatment a temporary change is brought about without causing permanent destruction.

The third degree is partial destruction, in which some cells are killed and others are not. This may be brought about by two methods, just as sterilizing by heat can be done by boiling or by raising to 57°C . on eight consecutive days. When blood serum is raised to 57°C . on eight consecutive days the albumin is not coagulated, yet all germs are destroyed. So with the skin and x -rays, by delivering a large dose once every three weeks certain cells are killed, while others escape. This principle is used to cure hyperidrosis, hypertrichosis, acne vulgaris adolescentium, bromidrosis, and rodent ulcer. If we attempted to cure these diseases by one large dose we would succeed, but at the same time we should be risking total destruction of the skin. I have on one occasion cured hyperidrosis by two applications, and hypertrichosis by one, but the reaction in the skin was so severe that I never attempted it again.

The fourth degree, total destruction by x -rays, I have only carried out on a few special occasions. One case, as an illustration, was that of a tumour, probably epithelioma, of the point of the nose. In this case a surgeon would have had to cut off so much of the nose that a false one would have been necessary. Very large doses of x -rays were applied, so that the tumour cells were killed outright, and the surrounding cells of the skin grew in and covered over the site of the tumour.

These four degrees of x -ray dose are measured in various ways. I am in the habit of using four methods at once, each method is thus a control on the other, and when all agree I feel perfectly sure that the patient has had the dose I wished to give. The four methods are:

1. Sabouraud's method;
2. A modification of Sabouraud's;
3. Kienbock's method;
4. Measurement of the energy passing through the x -ray tube.

Any one who attempts treatment by x -rays must first make himself master of the first method. Without it he gropes in the dark, and like a blind man he may arrive safely at his destination. This method is simple, and full instructions accompany the pastilles used. These can be procured from Leslie Miller, 66 Hatton Garden, London, England. Only one extra precaution is necessary in using the pastilles in Canada, viz., when the temperature outside is below zero and the air inside very dry, the pastilles must be kept in a humidor, otherwise they will very quickly become useless. In order to overcome this difficulty during transit from England, Leslie Miller sends them out airproof in waxed paper and lead foil. The humidor I use consists of a glass sponge jar with a lid. Into this I pour water to the depth of half an inch, and in this I stand a small tumbler holding the pastilles. They are thus always exposed to the light and to moist air. For the first six months I was in Canada I could not find out why the pastilles did not measure the dose as they did in England. The difference in humidity struck me as a possible cause, and during the past year and a half I have had no further trouble, so long as I kept the pastilles in a moist chamber. Although the method is simple, it is very necessary to learn it from watching an experienced worker carrying it out, and not from books. A mistake in treating a child's scalp might cause no epilation, and it might cause permanent epilation, according to the dose given. To learn the method from a book would be running the risk of the economical parent who owned one of those famous works entitled "Every man his own family doctor," or some such name, and made such good use of it that he finally had to call in a medical man, who warned the amateur that he and his family would probably die of a misprint.

The unit measurement for treatment is that amount of x -rays which will bring out the hairs of a child's head without causing redness or permanent baldness. In countries where ringworm is common, as in France, England and Germany, the x -ray worker becomes expert from practice in measuring the dose, but in Canada where ringworm is uncommon, the necessary skill is harder to acquire. In Quebec there is greater opportunity from the number of immigrants arriving with the disease. It may be that the dryness of the atmosphere is not conducive to the life of the organism. On the other hand, excessive perspiration is a condition I have found not uncommon in Canada, and as this is very amenable to x -ray treatment I shall devote some time to it. Up to the present I have treated about thirty cases of hyperidrosis, and in every

case the result of the treatment has been very gratifying. There are two distinct types, one ordinary excessive perspiration on exertion, heat or excitement, but the other variety goes on all day irrespective of the aforementioned conditions. The latter condition, which I described in the *Lancet*, in 1911, as hyperidrosis frigida, begins after rising in the morning, and goes on till evening. It usually stops in the evening, and always ceases during sleep. When it is the hands which are affected, they may be dried with a towel, and then you may watch the beads of perspiration rise and run together in three minutes, and drop from the finger tips in five minutes. When the armpit is affected the clothing is soaked through and wringing wet by the afternoon, and a change of clothing is necessary for comfort. It rots the clothes, and a white line is left by the salts of perspiration when the water evaporates. One patient told me he had had what he called his "high-water mark" for the last thirty years. In such cases as these six applications of x -rays in suitable doses at intervals of a month have in my practice cured every case so treated. The dose used is known as 10 X or 5 H, according to the method used for measuring it. Not only is excessive perspiration stopped by this treatment, but even normal perspiration is also stopped. The latter has been brought to my notice from the treatment of a case of splenic leukæmia. In this case the whole body except the head, armpits, and inner surface of the thighs received doses of x -rays sufficient to destroy the sweat glands. When the patient's temperature rose to 103° during the later course of the disease, he perspired freely on the untreated parts of the body, but those parts treated by the rays remained quite dry, and showed no trace of perspiration. After x -raying the skin of the axillæ so as to destroy the sweat glands, I had a piece sectioned and examined in the pathological department at St. Bartholomew's Hospital, London, Eng. The report that I received from the pathologist stated that no hair follicles nor sweat glands could be found, and that the skin took the stain badly. This accounts for the fact that when hyperidrosis is cured by x -rays it does not return. I have had reports from patients one and two years after treatment had been stopped, and no recurrence had taken place in any instance.

In treating hypertrichosis I now employ the same method, viz., one treatment a month till six treatments have been given, and by this method I have had the satisfaction of seeing superfluous hairs disappear with no disfigurement. The analogy between this method of treatment and sterilization by fractional heat seems a

very natural one. The attempt to remove superfluous hairs from a lady's face by one x -ray treatment is dangerous, usually unsuccessful, and now practically given up. Some people have a tendency to browning of the skin when treated for a prolonged period, and if this comes on they can be comforted by the assurance that the browning, which looks like tanning by the sun, will wear off just like sunburn, though it may take a little longer to do so. After the fourth treatment the skin grows more sensitive to x -rays, and the dose in the last two treatments should be reduced to half.

This is the first occasion on which I have advocated this method in public; it has been gradually coming to me during the last three years, since I advocated the six treatment method of treating hyperidrosis. It now seems natural to me that x -rays should act on the hair follicles as they do on the sweat glands; in fact, what's sauce for the goose is sauce for the gander.

It is only a step from superfluous hairs and excessive perspiration to acne vulgaris. In the latter we have germs flourishing in the sebaceous follicles and sweat glands, and by destroying these by x -rays we take away the food on which the germs subsist, and so put an end to the disease. The same form of treatment has to be carried out as described for hyperidrosis. But in this case the treatment does not need to be carried quite so far. I have seen the faces of men and women who have suffered from acne for many years clear up perfectly by this treatment. The scars left by the disease subside to a marked extent when no new pustules come out. Any case of acne vulgaris which will not yield to other measures in a reasonable period should be treated by x -rays before the face is scarred by the disease. In sycosis affecting a man's beard, only one treatment is necessary to effect a cure. A sufficient dose is given at one sitting to bring out the hairs, and when the hairs are out the disease ceases. After two months' time, when new hairs grow, the disease is gone, and the new hairs are not infected. I might remark here that it is a very different matter to cause epilation on a man's face compared to a woman's. A man's beard comes out easily by x -rays, whereas hairs on a woman's face are much more difficult to remove, and should only be removed by the fractional method.

Passing now to rodent ulcer we have to consider the pathology to understand why x -rays cure this disease, and why it apparently is cured only to break out again after a few months. In rodent ulcer we have malignant cells growing alongside the old cells of the old man's skin. When a sufficient dose of x -rays falls on these

malignant cells, they are killed, and the skin then grows from the edges over the ulcer. But deeper down some of the malignant cells, having received an insufficient dose, have been stunned only, and after two months begin to grow, and the scar breaks down. In order to prevent this occurring two methods are possible. One is, after the ulcer is healed to keep on giving *x*-rays once a month for six to twelve months; and the other is to give a sufficiently large dose at first at one sitting to kill all the deep malignant cells. I consider 20 H and 40 X the dose for this purpose. It may cause a little inconvenience to the patient, as the dose almost amounts to an acute *x*-ray burn, but its effect passes off, and the ulcer heals firmly after the application.

With these remarks I wish to close, and in this country where the latest methods are practised in diagnosis and treatment, I would ask you to adopt a more advanced method when speaking of *x*-ray treatment. Do not refer to the *x*-ray department derelicts of carcinoma, painful stumps, and any old thing that comes along, with a request to "try *x*-rays," but rather send cases such as I have mentioned, with a request for 10 X once a month, or 5 X every two weeks, as you would prescribe injection of 2,000 units of anti-toxin in diphtheria, or a certain weight of salvarsan for syphilis. For your guidance I mention the dose of *x*-rays required for treatment of the conditions I have mentioned:

1. Sycosis: 10 X one application to the diseased area.
2. Acne vulgaris: 3 X to the diseased area on three consecutive days. Wait for three weeks and repeat. Continue this till six treatments have been given.
3. Tinea tonsurans: 10 X to the whole scalp, one treatment only.
4. Rodent ulcer: 10 X once a month till ulcer is healed, then once a month for six or twelve more treatments, or 30 X or 40 X for one treatment only.
5. Hyperidrosis: 10 X once a month for four months. Then 8 X for two more treatments.
6. Hypertrichosis. As for hyperidrosis.
7. Cheloid: 3 X once a week for six to twelve months.

With this knowledge a definite scientific course of treatment is carried out, and the out-of-date term of "trying *x*-rays" will be a thing of the past.

Case Reports

A CASE OF PERSISTENT ENURESIS

IT has probably been the fate of nearly all of you to have been confronted with cases of enuresis in children of different ages, and after struggles of varying intensity and duration, you have probably in the majority of instances come out victorious. But there are rather rare cases where the enuresis persists far into adult life, in spite of all treatment, to the detriment of the patient's health and happiness. I have seen only three such cases, although they may be of more frequent occurrence than I suppose. Of the ultimate fate of one I am ignorant; the second I know is still uncured; the third is a patient of my own, and it is to describe the cure effected in that case that this paper is written.

It was my good fortune while in Vienna, in 1912, to study for a time under Dr. Franz Hamburger, Privatdozent for diseases of children at the Poliklinik in Mariannengasse, and I was especially impressed with the remarkable results obtained by this man in the various neuroses, especially enuresis. I can remember us asking him one day what he thought of the various methods of treatment of the latter condition, citing belladonna, colon bacillus vaccine, and other remedies that are in general use and over which there is such frequent controversy. "Gentlemen," said he, "I can cure with any of them and without any of them;" and he could. He was a man of strong character, most likable, and adored by every child in the clinic, and it was apparently by virtue of this nature alone that he performed his cures, although he frequently used some visible medicament such as pills or injection of sterile water to appeal to the minds of the younger, or less easily influenced patients. He had two main rules. If he felt he could not get into sympathy with the patient he would not undertake the cure. If he failed once he rarely tried again, but, as he said, saved valuable time by sending the patient to a confrère, and what was most impressive about the treatment was the complete absence of any of the distasteful tricks which are so frequently employed in suggestive therapy.

It was while I was still impressed with the knowledge gleaned

from this man of what could be done by legitimate and ethical methods of suggestion that the following case came under my care.

The patient was a girl of twenty-seven years of age, well educated, intelligent and of neat personal habits. She consulted me for various minor ailments, and as I gained her confidence she gave me the following history. All her life she had been in the habit of wetting the bed at night. She did not know at what time the accident occurred as it never wakened her, but she had reason to believe that the time varied and was usually in the small hours of the morning. She would occasionally, for no apparent reason, pass a night without incontinence, and has even gone two or three nights. At one time, as will be more fully described later, she was untroubled by any enuresis for one week while under treatment in Switzerland, but as a rule the bed-wetting was a nightly event. Moreover, she suffered from frequency of micturition by day, much worse in the cold weather, and on several occasions in winter she had involuntary passage of urine while out walking. As a child she was in the hands of many physicians. Belladonna had been pushed to the limit and other remedies tried, but without avail. Kindness and punishment were alike futile. When about nineteen years of age her mother took her abroad to see if the European doctors could accomplish a cure. It does not seem necessary when describing failures to mention the names of the doctors concerned, and you are requested to accept the statement that those consulted were efficient men, and that I have verified the patient's story by direct correspondence with them. The longest time the patient was under the care of any one physician was eight months, which were spent in Berne, Switzerland. There she received continuous and varied treatment; electrical, mechanical and medicinal. The only treatment that had any effect was the injection of some fluid around the spinal nerves in the lumbar region. I wrote to the doctor for more definite information, but received a very civil reply stating that he had forgotten the details of his treatment, but I believe that he reported the case at the time as very unusual. However, whatever the technique, the result was that seven nights were passed without incontinence. Then on the eighth day, while the injection was being given, the needle was inadvertently broken and part remained in the patient's back and had to be removed by operation. The patient was much frightened, the enuresis returned and resisted all further treatment. The patient was also under treatment by a specialist of genito-urinary diseases in London, England, who writes me that he

cauterized the neck of the bladder, but without result. Several Canadian physicians were also consulted, but for the last few years the patient had given up further attempts at being cured and resigned herself to a life of discomfort. Consequently I was at first not asked to treat the condition and did not offer. However, when my opinion was asked concerning the condition, I made an examination and, having satisfied myself that there was no gross abnormality present, stated that I thought the case far from incurable. For it appeared thus: if the patient occasionally had nights in which there was no enuresis and passed a good quantity of urine in the morning, the bladder must be normal in size and capable of containing the proper amount; also the mechanism of control must be efficient when properly exercised. Again, if she suffered from frequency by day, the bladder, far from being insensitive as she had been told on several occasions, must be hypersensitive, either organically or merely from continued, unconscious mental concentration during waking hours. Now there was at no time pain or burning in the bladder region, and the urine was never found to be very acid or alkaline and never purulent when I examined it; therefore inflammation or irritation from abnormal urine required no consideration. There then remained the question of an abnormal mental condition. Now the patient was a bright, intelligent girl, and as said before, very neat in her habits, and the enuresis could not be from carelessness or from a mental deficiency, in the common acceptance of the term. As for an irritating condition acting on an otherwise healthy nervous system, none could be discovered, for the patient was physically normal, had no adenoids and certainly not epilepsy. Now with an ordinary neurosis we ask naturally what first caused it and attempt to remove the cause. In the condition of which I write there was no beginning. It was not a case of acquired neurosis, but the lack of acquisition of a normal function. Hence the indication was to educate the patient's mind to the proper performance of this normal function.

Now this seemed only possible by complete isolation of the patient from family, friends and amusements, and this did not seem possible to obtain. For remember the patient considered her case hopeless, nearly every other physician she had consulted had also assured her she could be cured, but had failed. And it was a question whether she would submit to my treatment. But the matter was decided for her. On September the twelfth I was called to see her and found her on the verge of a nervous breakdown, the cumulative result of a gay winter's season, a strenuous summer and worry over some family affairs. She was apathetic,

inclined to weep without provocation, suffered from indigestion, coated tongue, constipation, and other stigmata of neurasthenia. I at once placed her in a rest cure establishment in charge of an efficient nurse. The daily routine practised was in part that commonly in use for neurasthenia. The patient arose every morning at 7.30 o'clock, and was given a douche of cold water down the spine while standing in a bath of warm water. She was then rubbed with a rough towel until thoroughly warmed and dried. Breakfast followed, being eaten in bed. At a given hour the patient visited the toilet, whether she felt the need or not, and remained seated on the stool for twenty minutes without straining. She returned to bed and rested quietly, sleeping as she felt inclined to; visitors and reading matter were prohibited. Dinner was given her at noon and was followed by a sleep; at 4 p.m. she was massaged; evening meal 6 p.m. No fluids were taken after four o'clock. On paying my first visit after the patient had become accustomed to her surroundings she was talked to as follows: it rested with her whether she would be cured of her enuresis or not. We would help her as much as possible by training her how to use her will power. So far during her life she had merely exercised a passive or defensive force of will. She had often been stubborn, but never creatively forceful. There was nothing the matter with the bladder or nerves thereof; this was reasoned out with her. The normal passage of stimuli from the brain to the bladder-controlling parts had never been properly exercised, and was therefore uncertain and failed during the night while the patient slept. The frequency by day was purely habit. Her duty then, before she retired to sleep, was to concentrate her mind on the fact that she was going to awake when the desire to micturate came, and get up and empty her bladder. It was explained that it had not been the patient's actual fault and no one insinuated that she willingly urinated heretofore, but from now on, with all the help we were able to give her by the added force of our wills, every fall from grace would be attributed to indifference and laziness of her intellect. The patient displayed some indignation at my apparently unreasonable point of view, but on finding the nurse and masseuse, who had been well coached, thoroughly agreed with me she set her mind resolutely to the task.

The treatment started to take effect almost at once. The patient began to waken in the night with the desire to urinate and would be just able to get up in time to prevent flooding the bed. This continued for four nights. On the morning of the sixth day I found the patient exceedingly depressed, tongue coated, lassitude

profound, and was greeted with the news that there had been incontinence during the night. I took her to task for her carelessness and repeated my talk of the first day. Eight nights passed without accident and then she commenced menstruating. Her periods are always severe and this was no exception. The pelvic congestion, the hot water bottle which had been given her, and the general depression resulted in incontinence, on the night of September 23rd. This was the last sign of the enuresis.

Shortly after this the question of the frequency during the day was taken up. The patient was accustomed to urinate as many as four or five times between breakfast and my visit, which was shortly before noon, and several times also during the afternoon. She was directed to hold her urine for a short time after the desire arose, but not long enough to cause discomfort, and fix the attention. As the general condition was by now improved, she was given books to read with instructions to get her mind off her bladder by day, by fixing her attention upon a book and lengthening the time between urinations. At the end of ten days the frequency had disappeared; and with its disappearance the bladder, having become accustomed to holding normal amounts of urine, sent no nocturnal messages to the brain, and consequently the patient slept most of the night through without wakening, and only on occasional nights was obliged to get up and pass her water. On October 1st patient was given soup and milk with her evening meal. She was naturally worried as to the probable result of this first attempt at taking fluids after four o'clock, but was strongly assured that if the increased fluids filled the bladder during the night, the worst that could happen was that she would awake conscious of the desire to urinate, and could get up and empty her bladder. She slept uninterruptedly all night. On October 20th menstruation again appeared, lasted three days, was milder than usual and occasioned no bad results. On October 24th fluids were administered immediately before the patient retired for the night and this caused no discomfort or nocturnal frequency. On October 26th the patient's family were allowed to see her, and on the succeeding days she was allowed to pay short visits to her friends, returning to the establishment at night. On October 30th she was discharged. Her general condition was much improved, the indigestion had disappeared, she looked healthy, happy and self-reliant, and was quite well as regards the bladder condition. There has been no relapse to date, it being, at the time of writing, nearly six months since the last incontinence.

London, Ont.

G. C. HALE.

Editorial

THE TRAGEDY OF OLD AGE

THE life of the aged always ends in tragedy, and there is a natural desire to hide the more sordid tragedies out of sight. The interest in the aged is confined to their immediate families. It is sometimes sentimental. More often it is merely dutiful. Occasionally it is not even that. The situation is worse amongst the rich than amongst the poor. The aged poor are nothing more than an encumbrance. Their passing is a negative relief to their relatives, a positive relief to themselves. The irony of the matter amongst the rich is that their taking off is usually of positive value to themselves and to their relatives as well. For them there is an end to misery; for their relatives an end of care, and the possibility, if not the certainty, of sharing in an inheritance.

For the old the young have little sympathy. They may pretend to suffer with them, but in reality they do not. Real sympathy would only increase the sum of suffering; and the young, with the egotism of youth, have an unconquerable aversion from destroying their own happiness by making themselves sharers in a misery they cannot alleviate. For the aged to demand such a sacrifice is in turn a manifestation of the egotism of the old. There is no spectacle more pathetic than a young life sacrificed to the tyranny of kith and kin, and it is the more pathetic when youth is yielded ungrudgingly. Two lives are destroyed instead of one.

Such is the law in western communities. It is the incentive of all labour, lest a man be cast in his old age upon the mercy of his own. That is the tragedy of *Lear*, although one cannot withhold from his daughters a certain sympathy.

They had a sure perception of their father's silliness in bothering with equerries and men-at-arms at his time of life. Amongst the Orientals a different view prevails. The old are venerated whilst they are alive; and their ancestors are venerated not because they are dead, but because they are ancestors. In a roundabout way this fidelity has its own reward. The aged are smitten in their conscience, and assist in their own taking off.

These reflections have arisen from a book entitled "Geriatrics."¹

Dr. Nascher, the author, also perceives, and says so with much feeling, that there is a natural reluctance to exert one's self for those who are economically worthless, and must remain so. Their appearance, he admits, is generally unæsthetic, their actions objectionable, their very existence often an incubus to those who in a spirit of humanity or duty take upon themselves the care of the aged. And yet the world would be the poorer if it were not for the presence of many of the aged and the suffering. Dr. Nascher puts the matter in its true light when he says that all ulterior considerations are paltry in the face of the physician's self-imposed task to relieve distress and prolong life.

Geriatrics is a new word; but there was a time when "pediatrics" also was strange. It may be of some comfort to the old to reflect that the diseases peculiar to their condition are coming in for especial consideration. The subject was taken up forty years ago by Charcot at the Salpêtrière in a series of lectures which were translated and added to by Dr. Loomis of New York in 1881, under the title of "Diseases of Old Age." Dr. Nascher has now made the subject his own, and he has written a most interesting and valuable book besides.

¹Geriatrics. The Diseases of Old Age and Their Treatment including Physiological Old Age, Home and Institutional Care, and Medico-Legal Relations. By I. L. Nascher, M.D., with an introduction by A. Jacobi, M.D. Illustrated. Price \$5.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.

THE SURGEON-GENERAL'S LIBRARY

THE Library of the Surgeon-General's Office in Washington is one of the largest collections of medical books in the world. In many respects it surpasses all other medical libraries. Notably is this the case in the services it has rendered to medical bibliography and in practical usefulness to the profession. To make use of its treasures it is not necessary to go to Washington, for with characteristic liberality books are freely lent to other libraries throughout the continent. This is a privilege which is frequently made use of by Toronto University and McGill.

It is therefore a matter of great concern to the profession that the efficiency and the continued usefulness of this library have been seriously menaced by an amendment which the United States Senate added recently to the annual Army Appropriation Bill. The amendment provides that during the course of the present year the Library of the Surgeon-General's Office shall be transferred to, and become a part of, the Library of Congress. Such action was unexpected, and consequently this extraordinary amendment, attached as an obscure "rider" to an important routine measure, passed practically unchallenged.

It is difficult to imagine a reasonable explanation of the proposed change. It is not desired by the librarian of either institution. And there is no room in the Library of Congress for this great collection of books all dealing with a special branch of knowledge. In 1912 the collection comprised 178,741 bound volumes and 317,740 pamphlets. It may be said without exaggeration that for this library to lose its identity and its autonomy, for it to be prevented from fulfilling the functions it has so admirably developed, would be a calamity to the profession, and a blow to the prestige of American medicine abroad.

The Medical Library Association has issued an appeal

to its members to bring to bear whatever influence they can command. It is particularly feared that the publication of the Index Catalogue and the Index Medicus will be discontinued. These prodigious works of reference are familiar to all who have ever had occasion to investigate the literature of any medical subject. They have become well-nigh indispensable. In connexion with them the name of the great librarian, the late Dr. John Billings, is to be remembered with gratitude. Under the appropriate heading "Men and Books," a charming sketch of his life and work, from the sympathetic pen of Sir William Osler, appeared in the JOURNAL of last July. In it the growth of the Library and its Catalogue are traced. The Index Catalogue in its two series now consists of thirty-three enormous volumes; while the Index Medicus, which was an outgrowth from the work on the Catalogue, is an extraordinarily complete monthly index of the medical literature of the world. For a time the publication of the Index Medicus was suspended, and those were dark days for all medical librarians and investigators. It is now issued by the Carnegie Institution of Washington, which Dr. Billings was also instrumental in founding.

It is to be hoped that when the Army Bill is returned to the House of Representatives for its concurrence, this improvident provision for the abolition of the Surgeon-General's Library, an act which would be not unworthy of the Turks at Alexandria, will be happily eliminated. One is encouraged in this hope by the fact that heretofore Congress has always been most generous in its treatment of a library which is one of the great achievements of American medicine.

THE ANNUAL MEETING

PREPARATIONS for the annual meeting in St. John, July 7th to 10th, are well advanced. An outline of the programme in the various sections, as so far arranged, will be found on another page. Particulars of the railway rates which

will be available are also given. The character of the programme is such as should assure a successful meeting. The discussion before the combined sections on intestinal stasis, a subject which is to-day very much to the fore, will undoubtedly be particularly instructive. The formal addresses are in good hands. We learn, however, with regret that Professor Jardine, of Glasgow, who, as we previously announced, was to give the address in obstetrics, finds himself unable to attend. Other arrangements are being made. Permission has been obtained from the Militia Department for the Association to hold its meetings in the new Armoury building at St. John, which is admirably suited to the purpose.

The programme is not yet completed, and those who desire to contribute are requested to send in the titles of their papers to the general secretary, or to the local secretary, Dr. J. S. Bentley. Members who expect to attend the meeting, and who desire hotel accommodation are requested to apply to the secretary of the reception committee, Dr F. T. Dunlop, 142 Waterloo Street, St. John.

PUBLIC HEALTH IN MONTREAL

IMPORTANT changes have recently been made in the Montreal Health Department, which is now under the directorship of Dr. S. Boucher. The work of the department has been reorganized and the name has been changed to the Municipal Board of Hygiene and Statistics. The scope of activity has been extended and now includes several branches which formerly were not under the control of the board. In the past the efforts of the department of statistics have been confined largely to the compilation of vital statistics; it is now proposed that more attention should be paid to statistics concerning the movements of the population, the number of cases of disease, and the influence of certain factors upon the health of the community. This work will be in charge of Dr. E. Gagnon and Dr. M. O'B. Ward. Sanitary

inspection and garbage collection are to be placed under the direction of the board and this, it is hoped, will result in more efficient work. The inspection of food will be in charge of Dr. A. J. G. Hood, and, in future, all milk analysis will be done at the municipal laboratories instead of by the inspectors. It is proposed to place the purification and analysis of the water supply also under the control of the board and to have all tests made at the municipal laboratories. The work of the department of contagious diseases and the medical inspection of schools, which is in charge of Dr. J. E. Laberge, is to be extended and the number of inspectors is to be increased. It is suggested that if the physicians engaged in this work were paid a sum sufficient to enable them to devote their whole time to it and to research connected with it, the results obtained would be much greater. Dr. Boucher suggests also that if the remuneration given to those who possess a diploma of public health were increased, and if the number of hours' work required each day from those who take the special course in hygiene were decreased, these men would be able to give more time to the solution of problems connected with public hygiene to the ultimate benefit of the community. The chief physician of the municipal medical service is Dr. E. P. Chagnon and it is suggested that a neurologist, an oculist, and a surgeon should be appointed; the surgeon, however, would not be required to give all his time to the work of the service. The work of the department of municipal assistance in future will include the prevention of tuberculosis, for which Dr. Boucher asks an annual grant of \$1,500, and the prevention of infant mortality, for which the same sum is asked. The publication of a municipal bulletin is strongly advocated, for which purpose an annual grant of \$300 would be necessary, and the same amount is requested for the purchase of technical books for the use of the members of the staff. The field of municipal health is a large one and contains many pitfalls. Dr. Boucher has begun well and if, among other things, he succeeds in taking

away from Montreal the unhappy distinction of a heavy infant mortality his efforts will not have been in vain.

THE Chicago Medical Society will hold its third annual meeting of alienists and neurologists of the United States from July 14th to 18th, next. The programme will be largely scientific, but an effort will be made to interest the public as well and one day will be devoted to a discussion of the causes and prevention of insanity, to which the public will be invited. A committee will report also on what constitutes a modern hospital or asylum and on the duties of the State to the physician. Arrangements have been made with the post-graduate schools of Chicago to give a complimentary course, which will embrace internal medicine and surgery, special regional surgery, cystoscopy, *x*-ray work, brain pathology, vaccine making, Wassermann reaction, etc. Physicians who attend the meetings of the society are invited to avail themselves of this course, for which tickets of admission may be obtained from the secretary, Dr. W. T. Mefford, 2159 West Madison Street, Chicago, Ill.

WIDE publicity was given in the press to a shocking accident which occurred recently in a hospital in Los Angeles, when eight patients suffering from syphilis of the nervous system all died within a few days following the intraspinal injection of neosalvarsan. An official report, which is published in the *Journal of the American Medical Association*, March 21st, makes it clear that the usual technique for the subdural injection of salvarsanized serum was widely departed from. The procedure in each case was as follows: Blood was withdrawn from a vein, and the serum secured. To this was added freshly dissolved neosalvarsan solution. The mixture after being heated was placed in a refrigerator for a day before being injected. It is supposed that oxidation took place in the neosalvarsan during this delay. In the method devised by Drs. Swift and Ellis, which has given

hopeful results, and which has not been followed by serious accidents, the drug is first injected intravenously, and then after a few hours, blood is withdrawn. From this is prepared the salvarsanized serum, which after being heated is injected without delay by lumbar puncture.

In all, rather more than two hundred fatalities have been reported following the use of salvarsan, by one method or another. In the Los Angeles cases the unfortunate result was apparently not due to an overdose of the neosalvarsan, as such, or to idiosyncrasy on the part of the victims to arsenic, but to an error of technique. It is to be feared that such an occurrence will bring undeserved discredit upon a useful drug, and a promising new method of administering it.

THE search for the cause of cancer has followed many strange clues. Coal smoke as a cause was the subject of a paper presented by Sir William Bennett at a recent Smoke Abatement Conference in London. Investigations carried on in Nairnshire, the Orkneys, and elsewhere, showed the incidence of cancer to be almost confined to coal-burning districts, while where peat was used the disease was seldom met with. In localities, however, where the peat was of the hard variety, which does not smoulder but burns with a long flame, a comparatively high cancer rate was found. The conclusion drawn from these and previous observations is that a large sulphur content in the fuel is associated with the occurrence of cancer.

A RECRUDESCENCE of smallpox is reported from Sydney, New South Wales. The opposition to compulsory vaccination is still very strong. It is suggested in the *Australasian Medical Journal* that it might be well to abolish public vaccination and to supply practitioners with lymph and pay them a small fee for every vaccination they perform. This would be a more costly procedure but would be an effectual method of dealing with the situation and would not meet with so much public prejudice.

Book Reviews

MODERN ANÆSTHETICS. By J. FREDERICK SILK, M.D. (Lond.).
Price 3s. 6d. net. London. Edward Arnold, 1914.

The time has gone by when a casual student was considered quite competent to administer an anæsthetic. The business is now entrusted to skilled hands, and books are written upon the subject. Of these specialists Frederic Hewitt was probably the precursor, and his book on "Anæsthetics" has long been the standard. Dr. Silk has now taken up the theme and he presents in this little book as much as it is necessary to know. The book is the outcome of experience and it lays especial stress upon those unforeseen difficulties which are so often encountered. It will prove itself to be a sure guide.

IMMUNITY. METHODS OF DIAGNOSIS AND THERAPY AND THEIR PRACTICAL APPLICATION. By DR. JULIUS CITRON, of Berlin. Translated from the German and edited by A. L. GARBAT, M.D. Second edition, revised and enlarged. Illustrated. Price \$3.50 net. Philadelphia, P. Blakiston's Son & Company, 1914.

It is not surprising that a second edition of Dr. Garbat's translation of Dr. Citron's "Immunity" has been demanded within a year. The book has already been translated into Italian, Spanish and Russian. In this edition the discussion of tumours and of anaphylaxis has been enlarged, and chemotherapy is much more fully considered. The treatment is critical as befits a book which is intended for the clinician; and yet it is neither meagre nor superficial.

THE BRADSHAW LECTURE ON THE BIOLOGY OF TUMOURS. By C. MANSELL MOULLIN, M.A., M.D., F.R.C.S. Published by request of the Council of the Royal College of Surgeons of England. Price 2s. 0d. net. London : H. K. Lewis, 1913.

This is one of those charming lectures which emanate occasionally from the English schools; broad and simple in its treatment, and yet presenting the subject in a new light. There is no

attempt at didactic teaching, no cataloguing of facts, no estimate of rival theories; but there is wisdom expressed in a literary way, with humour and pretty turns of phrase—altogether an evening's entertainment.

PAIN: ITS ORIGIN, CONDUCTION, PERCEPTION, AND DIAGNOSTIC SIGNIFICANCE. By RICHARD J. BEHAN, M.D., Dr. Med. (Berlin). Illustrated. New York and London. D. Appleton & Company, 1914.

The mystery of pain is as old as medicine. In modern times Hilton's "Rest and Pain," published in 1877, was the best consideration of the subject. In 1908 Dr. Rudolph Schmidt's book was translated by Drs. Vogel and Zinsser under the name of "Pain." Dr. Behan's treatise is quite the most elaborate that has yet appeared. For example, it contains a bibliography which covers sixty-two pages and there are over eight hundred pages of text exclusive of a complete index. Pain is almost universal as a symptom of disease. It is usually the first sign of impaired function. To alleviate it is the main business of the physician. Dr. Behan has explored the whole field of medicine, and nothing appears to have escaped his attention. He reasons acutely, and sheds a flood of light on many obscure conditions. It would be hard to imagine a more valuable book for a young practitioner. It will present disease to him in a new way.

OPHTHALMIC SURGERY. A TREATISE ON SURGICAL OPERATIONS PERTAINING TO THE EYE AND ITS APPENDAGES, WITH CHAPTERS ON PARA-OPERATIVE TECHNIC AND MANAGEMENT OF INSTRUMENTS. By CHARLES F. BEARD, M.D. Second edition, revised and enlarged with 9 plates., Price \$5.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.

Comparing this edition with the previous one, it is noted that two new chapters have been added, one on "The Newer Operations on Glaucoma" and the other on "The Surgical Treatment of the Detachment of the Retina." Descriptions of other valuable surgical procedures are given, such as, Toti's and Butler's operations upon the lacrimal canal; Elschnig's and Motais' on tendons; Rogman's and Wicherkiewicz's for epicanthus; Angelucci's for ptosis; Verhoeff's and Green-Ewing's for entropion; Terson's for ectropion; Falchi's for central coloboma of the upper lid; Beu-

dingers restoration of the lower lid. Indeed the latest teaching in ophthalmic surgery is here. The book contains about one-third more text than is to be found in the first edition, and the number of illustrations has been increased by eighty, yet the contents have been so condensed that the size of the book has not been materially increased. The book is beautifully printed, and considering the highly technical nature of the contents is remarkably free from error, but additional care with the index would not be misspent. For example, ligation of the canaliculus is to be found at page 136, and not 139 as stated. The book is one of high authority, and we can well imagine the pleasure an ophthalmic surgeon will have in it. Dr. Beard could quite profitably introduce in the next edition a section upon tumours of the eye-ball, and insist upon their removal at the earliest possible date. The illustrations are most effective, and many of them are beautiful in their clearness. By the publication of this book the credit of American surgery has been still further enhanced.

MEDICAL GYNECOLOGY. By S. WYLLIS BANDLER, M.D., adjunct professor of diseases of women, New York Post-Graduate Medical School and Hospital. Third thoroughly revised edition. Octavo of 790 pages, with 150 original illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$5.00 net. Half morocco, \$6.50 net. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

This book, as its name implies, was written as the result of a demand for a work which dealt with the non-operative side of gynæcology. Operative procedures were viewed only as a last resort in those numerous conditions where so much could be accomplished without them. The demand for a new edition of the work has become more urgent in view of the more general recognition in every department of medicine of the importance of the internal secretions. In the earlier edition Dr. Bandler contended for the importance of these secretions. Since that time their importance has been amply proved, especially in this country by Cushing, and abroad by Kermauner, Novak, and Biedel. In the present edition much has been added on the relations of the various glands producing internal secretion to pathological and normal states. It is not too much to hope that as a result of the vigorous presentation of the case in this work, a more thorough trial of purely medicinal measures will be made before operation is resorted to.

INTERNATIONAL CLINICS. A QUARTERLY OF ILLUSTRATED CLINICAL LECTURES AND ESPECIALLY PREPARED ORIGINAL ARTICLES. Edited by H. W. CATTELL, A.M., M.D., and others. Volume 1. Twenty-fourth Series, 1914. Philadelphia and London: J. B. Lippincott Company. Agent for Canada: Chas. Roberts, Montreal.

One is always sure to find something interesting in these Clinics. For twenty-five years they have appeared with unfailing regularity, and each number contains so varied a content that every reader will be satisfied. The quality of the writing is uniformly high.

A MANUAL OF *x*-RAY TECHNIC. By ARTHUR C. CHRISTIE. Illustrated. Philadelphia and London: J. B. Lippincott Company, 1913. Agent for Canada: Chas. Roberts, Montreal.

Designed especially for medical officers of the United States Army, who are obliged to familiarize themselves quickly with the technique of radiology, this book is limited to essentials. It will be found useful by a corresponding class in civil life, who find it expedient or necessary to do their own *x*-ray work. Wisely, we think, the number of reproductions of radiograms has been limited, as the ability to interpret them can only be gained by experience with the originals.

THE PRACTICE OF PEDIATRICS. By CHARLES GILMORE KERLEY, M.D., professor of diseases of children, New York Polyclinic Medical School and Hospital. Octavo of 878 pages, 139 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$6.00 net; half morocco, \$7.50 net. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

Dr. Kerley will be remembered as the author of an admirable work on "The Treatment of Diseases of Children." The present volume is an extension of the subject on an elaborate scale. It contains nearly nine hundred pages, and every paragraph is considered afresh. One would say that the note of the book is the minute attention given to treatment, not with drugs alone, but by all those methods which modern nursing has brought to the aid of the child. Dr. Kerley has had an enormous experience which he brings for the enrichment of every page of his book.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A MANUAL OF CLINICAL DIAGNOSIS BY MEANS OF LABORATORY METHODS FOR STUDENTS, HOSPITAL PHYSICIANS AND PRACTITIONERS. By CHARLES E. SIMON, B.A., M.D. Eighth edition, enlarged and thoroughly revised; illustrated. Price, cloth, \$5.00 net. Philadelphia and New York: Lea & Febiger, 1914.

PHARMACOLOGY: CLINICAL AND EXPERIMENTAL. A GROUNDWORK OF MEDICAL TREATMENT, BEING A TEXT-BOOK FOR STUDENTS AND PHYSICIANS. By DR. HANS H. MEYER, Vienna, and DR. R. GOTTLIEB, Hamburg. Authorized translation into English by JOHN TAYLOR HALSEY, M.D. Illustrated. Philadelphia and London: J. B. Lippincott Company, 1914. Agent for Canada: Chas. Roberts, Montreal.

OPHTHALMIC SURGERY. A TREATISE ON SURGICAL OPERATIONS PERTAINING TO THE EYE AND ITS APPENDAGES, WITH CHAPTERS ON PARA-OPERATIVE TECHNIC AND MANAGEMENT OF INSTRUMENTS. By CHARLES H. BEARD, M.D. Second edition, revised and enlarged, with 9 plates. Price \$5.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.

TUBERCULOSIS. ITS CAUSE, CURE AND PREVENTION. By EDWARD O. OTIS, M.D. Illustrated. Price, \$1.25 net. New York: Thomas Y. Crowell Company, 1914.

INTERNATIONAL CLINICS. A QUARTERLY OF ILLUSTRATED CLINICAL LECTURES AND ESPECIALLY PREPARED ORIGINAL ARTICLES. Edited by H. W. CATTELL, A.M., M.D.; and others. Volume I. Twenty-fourth Series, 1914. Philadelphia and London: J. B. Lippincott Company. Agent for Canada: Chas. Roberts, Montreal.

THE PATHOGENESIS OF SALVARSAN FATALITIES. By DR. WILHELM WECHSELMANN, directing physician of the dermatological department of the Rudolf Virchow Hospital, Berlin. Authorized translation by CLARENCE MARTIN, M.D. St. Louis: The Fleming-Smith Company, 1913.

THE PRACTICE OF PEDIATRICS. By CHARLES GILMORE KERLEY, M.D. Illustrated. Price, cloth, \$6.00 net; half morocco, \$7.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

MEDICAL GYNECOLOGY. By S. WYLLIS BANDLER, M.D. Third revised edition. Illustrated. Price, cloth, \$5.00 net; half morocco, \$6.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

THE PRACTICE OF SURGERY. By RUSSELL HOWARD, M.S. (Lond.), F.R.C.S. (Eng.). With eight coloured plates and 523 illustrations in the text. Price 21s. London: Edward Arnold, 1914.

THE UNCONSCIOUS. THE FUNDAMENTALS OF HUMAN PERSONALITY NORMAL AND ABNORMAL. By MORTON PRINCE, M.D., LL.D. Price \$2.00. New York: The Macmillan Company. Toronto: The Macmillan Company of Canada, Limited, 1914.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE, Volume VII, No. 4, February, 1914. Price 7s. 6d. net. London, New York, Calcutta, and Bombay: Longmans, Green, & Company.

MODERN ANÆSTHETICS. By J. FREDERICK W. SILK, M.D. (Lond.). Price 3s. 6d. net. London: Edward Arnold, 1914.

CHRONIC COLITIS. ITS CAUSATION, DIAGNOSIS AND TREATMENT. By GEORGE HERSCHELL, M.D., (Lond.), and ADOLPHE ABRAHAM, M.D., (Cantab.). Price 6s. net. London, New York, Bombay and Calcutta: Longmans, Green & Company, 1914.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

SALVARSAN AND NEOSALVARSAN INJECTIONS. BY DR. E. SCHREIBER. *Muenchener Medizinische Wochenschrift*, No. 36, 1913.

THERE has been much discussion of late as to whether one may use salvarsan and neosalvarsan in concentrated solutions; and it cannot be denied that the decision is of great practical importance. It is obvious that the present somewhat complicated technique of salvarsan infusion is one that cannot be followed by every practitioner during office hours and one would gladly welcome a more simple method. During our first experiments with salvarsan we soon determined to try a concentrated solution so as to shorten the time of injection and simplify the technique, but our results and those of other clinicians made us resolve to give up the attempt, since we found that the stronger the solution the greater the toxicity. It is quite otherwise in the case of neosalvarsan. Our toxicological experiments convinced us that here the concentrated solutions were no more dangerous than the weaker ones. How is this difference between the two preparations to be explained? Ehrlich has always emphasized the fact that the toxicity of salvarsan depended upon the oxidation products, but neosalvarsan has more tendency to auto-oxidation than old salvarsan. Now if we dissolve some neosalvarsan with 10 ccm. in a closed vessel the auto-oxidation will naturally be less than if a greater amount of water were used, in which case the contact of the preparation with the oxygen of the air and the water, when the mixture is shaken about, is much more complete. Moreover, when we use neosalvarsan in concentrated solution we produce a solution which is nearly isotonic with the blood, which, in the case of salvarsan, can only be obtained by much weaker solutions.

During the last few months we have used neosalvarsan in concentrated solution only, and I can agree with Duhot, Ravaut, Strauss and others whose experience leads them to recommend neosalvarsan. We now dissolve .75 g. in 10 ccm. of physiological salt solution and make the injection with an ordinary 10 ccm. syringe. I must warn you against using anything but sodium

chloride solution, for distilled water, by means of its haemolytic action, may give unfavourable results. It is also thought that with repeated injections the unpleasant symptoms produced are the result of a form of anaphylaxis. It is again possible that the oxygen of the blood combines with the neosalvarsan to form toxic products. Since we have made a practise of giving the injections every eight days with .75 g. as the highest dose we have seen no exanthema and the gastric and intestinal symptoms have been very mild. One is indeed astonished how well the injections are tolerated. Great care must be exercised, on account of the concentration of the solution, to allow none to be injected under the skin. We stick the needle into the vein, and as soon as the blood flows from the needle, the syringe is attached and the fluid injected. It is my belief that neosalvarsan may be very strongly recommended for those in practice.

THE THERAPEUTIC USE OF CAMPHOR. BY H. LEO, of Bonn University. *Muenchener Medizinische Wochenschrift*. No. 43, 1913.

The author advocates the use of a saturated aqueous solution of camphor given intravenously. He has proved by animal experimentation that the drug not only acts more quickly when given in this manner, but that the effects are more lasting than with hypodermic injection. The stimulating action on the cortical centres and on the respiratory centre is quite remarkable, as is also the rise of blood pressure produced in an animal in which the heart has been artificially weakened by phosphorus. The favourable effect on pneumococic infections is of interest, for the drug seems to have a bactericidal effect on these organisms. It has certainly been proved that the serum of an animal that has been treated with camphor has an inhibitory action on the growth of pneumococci. Again, the expectorant action of camphor in bronchitis and broncho-pneumonia, especially in children, has long been recognized; but it is a question if the favourable effect produced in these cases is not due to the stimulation of the respirations. Regarding the dosage, the author noticed that if 5 ccm. per kilogram of the animal's weight were given it produced spasm of the facial muscles; he would therefore recommend proportionately smaller doses for humans. He suggests an injection of 150-200 ccm. of the camphor solution for a person of average size, i.e., of 60 kilograms in weight. As the saturated aqueous solution contains .142 g. camphor per 100 ccm. this would mean a dose of .21-.28 g. of the drug.

GONORRHOEA IN AN INFANT. BY FELIX REINHARD of Düsseldorf.
Muenchener Medizinische Wochenschrift, No. 9, 1914.

Considering the rarity of gonorrhoea in new born male infants, in contrast to the comparative frequency of vulvo-vaginitis in new born girls, the infrequency of complications in the condition, and because of the fact that the child received the infection from a vagina in a stage of the disease so chronic that treatment had long been given up as unnecessary, the author publishes the following case. The child was born on November 9th. On November 21st the author was called and found marked œdema of the prepuce and from the urethra could be milked a considerable quantity of pus. The discharge became less, but on December 3rd the scrotum became red and swollen and finally broke down, discharging purulent material. On December 8th the left knee joint became red, swollen and fluctuating. The child had become weak and emaciated and died on December 9th. The author draws a moral regarding the necessity of silver nitrate instillation into the eyes of the new born as routine; for in the above case, thanks to this treatment, the eyes were unaffected.

VESICAL CALCULUS.

At a meeting of the German Urological Society in Berlin in September, 1913, as reported in the *Muenchener Medizinische Wochenschrift*, the question of treatment of vesical calculus was discussed. Federoff of St. Petersburg thought that the suprapubic operation and litholapaxy gave about the same small mortality—two to three per cent. He considers the latter the method of choice unless for some reason contraindicated. In the suprapubic operation it is best to close the bladder completely with cat-gut sutures and use a retention catheter in the after-treatment. Preindlsberg gave as his mortality statistics: 11 per cent. by the suprapubic route, 7 per cent. by the perineal route and 1 per cent. with litholapaxy. As to choice of the first two operations he prefers the modern perineal cystotomy with primary separation of the rectum. Zuckerkindl of Vienna thought that the advance of local anæsthesia had opened up great possibilities with regard to the crushing method. Israel of Berlin, in speaking of local anæsthesia, warned against the intra-vesical injection of alypin since a 3 per cent. solution has been known to cause death; he recommends a 1 per cent. solution of novocain. Goldsberg remarked on the comparative frequency of albuminuria in cases of vesical calculus.

London, Ontario.

G. C. HALE.

1. ON THE COMPARATIVE VALUE OF CERTAIN DRUGS IN THE HYPERTENSION OF ARTERIOSCLEROSIS. BY R. K. RUTKEWITSCH. *Zeitschrift für Klinische Medizin*, Bd. 79.

Investigations were made on fifteen patients, and the following drugs were used: vasotonin in daily injections of 1 c.c. for ten days; nitroglycerine, 2 to 4 drops three times daily for seven days; of a one per cent. solution of nitroglycerine, or sodium nitrite, 0.2 gm. daily over the same period; guipsine, 6 pills daily for eight days; and the iodides (calcium or sodium) 1 gm. daily increasing to 2 gm. for ten days. Where possible the four drugs were administered to each patient. Korotkoff's method of estimating the systolic and diastolic pressures was adopted; the patient was always in the sitting position and the records were made each day at the same time. To counteract the effect of rest in bed, hospital diet, and the quietness of the medical wards, investigations were only commenced after the patient had remained one week in the hospital. The pulse rate, blood pressure, and the quantity of urine passed in the twenty-four hours were recorded each day, beginning one week before the administration of the drugs and continuing throughout the investigations.

The results were identical in each case and were as follows: The administration of vasotonin and guipsine had no appreciable effect on the pulse rate, blood pressure, or total quantity of urine. The nitrites produced a temporary lowering of the blood pressure, never of a longer duration than two or three hours. Sodium nitrite always gave rise to unpleasant subjective and objective symptoms; this was not seen when nitroglycerine was employed. When the iodides in doses of 2 gm. a day were given, there was a considerable lowering of the blood pressure. In most of the cases there was a corresponding improvement in the subjective symptoms; in the remaining cases, however, this was not noticed. With the discontinuance of the drug there was an immediate return of the blood pressure to its former level, with the accompanying subjective symptoms.

From the results obtained in these fifteen cases the investigator concludes that these drugs used by him are of little or no avail in the treatment of hypertension. He suggests that opo-

therapy, associating as it does hypertension with the internal secretory function of the glands, offers a good field for investigators.

In the meantime, we must content ourselves with the good results obtained from diet and physiotherapy.

2. DIABETES AND SURGERY. *Deutsche Medizinische Wochenschrift*, Jan. 1, 1914.

At a joint session of the Berliner Gesellschaft für Chirurgie and of the Verein für Innere Medizin und Kinderheilkunde in Berlin, there was a general discussion concerning the conditions under which one might operate on diabetics. Professor F. Kraus read a letter from Payr, of Leipzig, who in the last year had operated on twenty-three cases with diabetes. Of these the following were aseptic: hernias, hypertrophy of the prostate, mammary carcinoma, struma with tracheal stenosis, amputation, neuroma, and hypernephroma; the following were not aseptic: gastric and duodenal ulcer, carcinoma of the large bowel, vesical and renal calculi, and hæmorrhoids; the remaining were septic: empyema of the pleura, abscesses, glossitis and cellulitis. Of these twenty-three cases three died; they had been operated on for the following conditions: urinary infiltration in stricture of the urethra with false passages, strangulated hernia with gangrene of the bowel, and cholelithiasis.

Payr concludes from his own experience that surgical measures are contraindicated only when diabetes is accompanied by acetone, diacetic acid and beginning coma. (2) Aseptic wounds of diabetics heal as readily as those of others. (3) The severity of the disease depends not so much upon the actual amount of sugar present in the urine, as upon the possibility of diminishing its quantity, and upon the toleration of the individual for carbohydrates. (4) Before operation an attempt should be made to reduce the amount of sugar. (5) Surgical measures may be undertaken in the following conditions: wounds, diseases where death must otherwise follow, incarcerated hernia, appendicitis, etc., diseases which must eventually prove fatal, malignant tumours, diseases which may never prove fatal, but which, unless treated surgically, will cause considerable suffering, irreducible hernia, vesical and renal calculi, etc. (6) Cosmetic and plastic operations should be avoided when possible; (7) Chloroform should be avoided because of its injurious action on the liver and pancreas; ether also, though to a less extent, does harm to the large glands of the abdomen; local or spinal anæsthesia is to be preferred. (8) The graver the condition, the

less should be the thought given to the presence of sugar in the urine. (9) The prognosis should be reserved in all cases. (10) During convalescence care should be given to the diet.

Launyn, in a letter to Kraus, sums up his experience as follows: (1) The wound of a diabetic offers a greater danger in healing than that of another. (2) Every attempt should be made to reduce the sugar in the urine before operation. (3) Aseptic surgery is permitted even if glycosuria is great, if conditions are threatening. (4) Post-operative coma may occur after any operation, and after any anæsthetic. (5) Post-operative coma must be looked upon as an acid coma, hence every diabetic before operation should be given sodium bicarbonate.

Von Noorden says: (1) The danger lies in the greater susceptibility to infection. (2) There is a diminished resistance of the tissues, and a diminished tendency to healing of the wound, even though the wound be not infected. Avoidance of antiseptics favours wound healing. (3) Arteriosclerosis is usually present in diabetics over 40. This should be recognized when operating on extremities, and in the presence of gangrene. (4) Weakness of the heart muscle is present in the young diabetic as well as in the old; it may be dependent upon the vessels of the heart, but is usually a primary condition; prolonged narcosis favors this cardiac weakness. (5) The danger of narcosis is increased, if acidosis is present; this applies particularly to chloroform. (6) There is a tendency to after-bleeding.

Minkowski is of the opinion that the unfavourable healing of the wound depends upon: hyperglycæmia, abnormal metabolism, and a functional disturbance of the organs associated with the altered carbohydrate exchange. This is seen in a favouring of the development and conditions of growth of the infecting agent, in a diminished regenerative process, and in a diminished power of resistance. The unfavourable influences of surgical measures are: psychical shock, and the action of the operative trauma on the nervous system; injury to the organism from loss of blood; and injury to the respiratory and circulatory systems. As a result of the operation there may be an advance of the disease, acidosis may develop and lead to coma, there may be an increased loss of strength, and an increased heart weakness. The dangers of operation may be lessened by rigid asepsis, by the choice of an anæsthetic, by the speed of the operation, by the diet after the operation, and by giving large quantities of alkalies before the operation.

CANADIAN MEDICAL ASSOCIATION

ANNUAL MEETING, ST. JOHN, N.B., JULY 7TH TO 10TH

Preliminary Programme (April, 1914)

Address in Medicine: Thomas McCrae, M.D., professor of medicine, Jefferson Medical College, Philadelphia.

Address in Surgery: J. Rutherford Morison, F.R.C.S., professor of surgery, University of Durham, Newcastle-on-Tyne, England.

Address in Obstetrics: Henry Jellett, M.D., F.R.C.P.I., Master of the Rotunda Hospital, Dublin.

Section of Medicine

W. H. B. Aikens, Toronto: Radium.

H. B. Anderson, Toronto: (To be announced).

Percy Brown, Boston: Intestinal stasis and "chronic rheumatism"; a Roentgenologic consideration of the relation between them.

Max Einhorn, New York: Peptic ulcer.

F. G. Finley, Montreal: (To be announced).

W. F. Hamilton, Montreal: Paroxysmal tachycardia.

W. B. Kendall, Gravenhurst: Tuberculosis.

A. McPhedran, Toronto: Report of a case of aortic aneurysm with recurrent fever.

H. C. Parsons, Toronto: Tuberculosis in children.

A. Howard Pirie, Montreal: Lung abscess.

C. K. Russel, Montreal: Syphilis and "parasymphilis" of the nervous system and the results of treatment with salvarsan.

D. A. Shirres, Montreal: Psychic shock, and its varying effects.

H. A. McCallum, London: The relation of angina pectoris to infection.

J. A. MacGregor, London: (To be announced).

J. T. Fotheringham, Toronto: The use of carbolic acid in tetanus, with description of a case.

J. Kaufmann, Montreal: Clinical significance of a knowledge of the diastolic blood pressure, and the potential difference.

T. F. Cotton, Montreal: Cardiac hypertrophy.

Section of Surgery

G. E. Armstrong, Montreal: Linitis plastica.

G. W. Crile, Cleveland: (To be announced).

Harvey Cushing, Boston: Pituitary disorders.

J. M. Elder, Montreal: Some points in the treatment of fractures.

A. MacKenzie Forbes, Montreal: Sciatic pains, their cause and treatment.

A. E. Garrow, Montreal: Diagnosis and treatment of exophthalmic goitre, with a short report of cases.

J. H. Halpenny, Winnipeg: Tuberculosis of the spleen.

F. W. Nagle, Montreal: The selection of anæsthetics, sequences and methods.

I. Olmsted, Hamilton: (To be announced).

A. Primrose, Toronto: Hour-glass contraction of the stomach.

C. L. Starr, Toronto: Congenital dislocation of the hip.

F. N. G. Starr, Toronto: Splenectomy: indications for operation; the operation and its after-effects.

John Stewart, Halifax: Chloroform anæsthesia.

W. G. Anglin, Kingston: Subtrochanteric fractures of the femur.

W. G. Turner, Montreal: The use of the bone graft in surgery.

Wm. Hutchinson, Montreal: Renal and ureteral calculi, with a new method of removing the latter.

SURGICAL CLINIC AT THE GENERAL PUBLIC HOSPITAL: G. E. Armstrong, Montreal.

X-ray Section

Percy Brown, Boston: An improved method of Roentgen technique as applied to the head, with special reference to the nasal accessory sinuses and the perisellar neighbourhood.

J. T. Case, Battle Creek Sanatorium: Gastric carcinoma.

L. G. Cole, New York: Diagnosis of gastric and duodenal ulcers, and gall-bladder infection, with or without calculi.

G. G. Corbet, St. John: Articulations.

J. L. Duval, St. John: Fractures.

W. H. Eagar, Halifax: Bone lesions (with lantern demonstration).

S. W. Ellsworth, Boston: Résumé of the evening clinic for diagnosis of the diseases of the chest.

A. W. George, Boston: (To be announced).

G. McNeill, London: (To be announced).

A. Howard Pirie, Montreal: The rugæ of the mucous membrane of the stomach in various diseases of that organ as shown by x-rays.

W. L. Watt, Winnipeg: The chest.

R. Wilson, Montreal: Radiography of the accessory sinuses.

Combined Sections

DISCUSSION ON "INTESTINAL STASIS"

Medical: C. F. Martin, Montreal; Max Einhorn, Boston;
A. McPhedran, Toronto, and others.

Surgical: A. Primrose, Toronto; J. M. Elder, Montreal;
F. N. G. Starr, Toronto; R. E. McKechnie, Vancouver, and others.

Anatomical: A. C. Geddes, Montreal.

X-ray: J. T. Case, Battle Creek, Mich.; L. G. Cole, New York,
and others.

Section of Obstetrics and Gynæcology

G. S. Cameron, Peterborough: Puerperal infections.

J. R. Goodall, Montreal: The treatment of puerperal infections.

F. A. L. Lockhart, Montreal: Pelvic inflammation.

B. P. Watson, Toronto: (To be announced).

James Torbert, Boston: (To be announced).

Section of Ophthalmology and Oto-Laryngology

Eugene Crockett, Boston: Ear deafness and treatment by 606.

G. K. Mathewson, Montreal: A primary syphilitic lesion on
the conjunctiva.

S. H. McKee, Montreal: Interstitial keratitis.

J. W. Stirling, Montreal: (To be announced).

J. A. MacMillan, Montreal: Treatment of squint.

H. S. Muckleston, Montreal: A case of pharyngitis in associa-
tion with erysipelas.

D. H. Ballon, Montreal: Recent investigations on the semi-
circular canals and their clinical applications.

Section of Public Health

PUBLIC LECTURE: C. A. Hodgetts, medical adviser, Com-
mission of Conservation, Ottawa: Health problems in Canada.

REPORTS OF COMMITTEES:

Medical Inspection of Schools: Chairman, J. H. Halpenny,
Winnipeg.

Applied Sociology: Chairman, P. H. Bryce, Ottawa.

Mental Hygiene: Chairman, Helen MacMurchy, Toronto.

Venereal Diseases: Chairman, J. G. Adami, Montreal.

CHAIRMAN'S ADDRESS: H. W. Hill, London.

G. C. Jones, Ottawa: The importance of the recent Balkan war to the Canadian medical practitioner.

Lorne Drum, Ottawa: Militia sanitation and its influence on the public health of the country.

C. J. Hastings, Toronto: Industrial diseases and industrial hygiene.

P. H. Bryce, Ottawa: The methods of conservation of food products in relation to public health.

A. P. Reid, Nova Scotia: The housing problem: a business proposition.

J. D. Pagé, Quebec: The immigrant, the profession, and the nation.

J. W. S. McCullough, Toronto: Public health in Ontario.

T. A. Starkey, Montreal: (To be announced).

J. A. Grant, Halifax: The medical profession and the militia service.

C. T. Graham-Rogers, New York: (To be announced).

A. F. Miller, Kentville, N.S. (To be announced).

M. M. Seymour, Regina (To be announced).

Laboratory Section

D. Fraser Harris, Halifax: The rhythm of voluntary muscular contraction and its relation to the tremor of tonus.

E. K. Maclellan, Halifax: The biological and other blood tests in the law courts.

J. Kaufmann, Montreal: (1) Wohld's method of demonstrating the relative sizes of the cavities of the heart in dry specimens; (2) Injection of the subendocardial bursal spaces to demonstrate the auriculo-ventricular bundle.

J. Kaufmann and E. L. Judah, Montreal: A rapid colour method for the differentiation of fat in gross specimens.

J. J. Ower, Montreal: (1) Complement fixation in gonorrhea; (2) Early aneurysm of the aorta.

L. J. Rhea and E. H. Falconer, Montreal: A bacteriological study of the lymph nodes removed from a case of Hodgkin's disease.

L. J. Rhea, Montreal: (1) The comparative pathology of the tracheal lesions in whooping cough and canine distemper; (2) The comparative pathology of anterior poliomyelitis and "blind staggers" in the horse.

S. H. McKee, Montreal: Demonstration with specimens, (1) Amaurotic family idiocy; (2) Retinitis pigmentosa; (3) A comparative study of the bacillus bronchi septicus and the Bordet-Gengou bacillus of whooping cough.

RAILWAY RATES

Reduced fares for the meeting have been arranged as follows: From Montreal by the Canadian Pacific and the Intercolonial railways, and from all points on the latter railway, the rate will be a single fare for the return journey; from all other parts of the country, and by all lines, the rate will be a fare and one-third. These rates are available for physicians attending the meeting and for members of their families accompanying them. To take advantage of the reduced rates a physician when starting on the journey must obtain from the ticket agent a standard convention certificate properly filled in and signed by the latter. These certificates will be endorsed at St. John, first, by the secretary of the Association, and secondly, by a special agent who will be in attendance at the meeting on July 8th and 9th for this purpose. He will collect 25c in respect of each certificate which will then entitle the holder to a return ticket to his starting point, either without further charge, or at the rate of one-third fare, as the case may be. From Fort William, Ontario, and all points east, tickets for the going journey must be purchased between the dates July 3rd and 9th, both inclusive, and properly validated certificates will be honoured at St. John until July 14th, for continuous passage tickets through to the original starting point by the direct route. From points west of Fort William, in Ontario, Manitoba, Saskatchewan, and Alberta, these dates will be June 29th to July 3rd, and July 25th, respectively; and from points in British Columbia the dates will be June 25th to 30th, and July 25th, respectively.

The Canadian Association for the Prevention of Tuberculosis meets in Halifax on July 13th and 14th, the Monday and Tuesday following the St. John meeting. Those who wish to attend both meetings and take advantage of the reduced rates, must purchase a single fare ticket from their starting point to *Halifax*, obtaining from the ticket agent a standard certificate as above, and also stop-over privileges at St. John, or a free side trip from Moncton to St. John and return, according to the route travelled. Certificates in this case will be honoured at Halifax for the return journey to points east of Fort William until July 18th.

Further particulars will be published in the June issue of the JOURNAL.

Obituary

DR. H. J. SULLIVAN, of Chatham, Ontario, died of pneumonia March 18th. Dr. Sullivan, who was thirty-nine years of age, was born in Picton, Ontario, and was a graduate of Toronto University. He had practised in Chatham for eight years. He leaves a widow and two children, aged four and five years respectively.

DR. CHARLES B. LAKE, of Ridgetown, Ontario, died March 18th. Dr. Lake was born in the county of Frontenac, November 5th, 1842. He graduated from Queen's University in 1866 and first went into practice at Thamesville. In 1867 he removed to Ridgetown. He is survived by his widow and three sons.

DR. A. L. McLAREN, of Point Edward, Ontario, died March 18th, in the sixty-seventh year of his age. Dr. McLaren was reeve of the village of Point Edward and was a well-known physician throughout the county of Lambton. He was born at Campbellville and graduated from the University of Toronto. He practised for a short time at Port Huron, and for the past twelve years had been in practise at Point Edward. He is survived by his widow and an adopted daughter.

DR. ALEXANDER SANGSTER, of Stouffville, Ontario, died March 23rd, in the fifty-sixth year of his age. Dr. Sangster graduated from Victoria University in 1884 and at once went into practice at Stouffville. He leaves one son, Dr. F. N. Sangster, of Sarnia.

DR. A. J. SINCLAIR died at Paris, Ontario, March 22nd. Dr. Sinclair was a well-known practitioner in western Ontario. He was born near St. Thomas and was educated at the Grammar School there. He was Grand Trunk surgeon at Paris for twenty-five years and for some time was medical attendant of the Ontario School for Indians at Brantford.

DR. G. L. LAFOREST, of Montreal, died March 26th. Dr.

Laforest was born in Quebec in 1857. He was educated at Fredericton, New Brunswick, and at Victoria, British Columbia, and for the past thirty-five years had resided in Montreal. He leaves a widow, two sons, and one daughter.

DR. HUGH WATT died at Elko, British Columbia, March 23rd. Dr. Watt had been in charge of an Indian Reservation at Fort Steele.

DR. W. C. COUSENS, of Ottawa, died on Sunday, April 12th, at the age of fifty-nine. Dr. Cousens graduated from McGill University in 1882 and afterwards studied at Edinburgh and London. He built up a large practice in Ottawa, where he soon became a prominent member of the profession. He was greatly interested in St. Luke's Hospital and last year became chief physician there. Apart from his professional work, Dr. Cousens was a sportsman, a musician, and a literary man of no mean ability. He was a man of great benevolence and his death is much regretted. He leaves a widow, three sons, and two daughters.

News

MEDICAL COLLEGES

THE Faculty of Medicine of McGill University will give this year, as usual, instruction to post graduate students. The work offered will be almost entirely clinical, the chiefs in medicine, surgery, and the specialties in the Royal Victoria, Montreal General, and Maternity Hospitals taking part. The course will begin on Monday, June 1st, and will continue for two weeks.

THE Dental Department is also offering a post graduate course

this year and has already received applications for the work which will be continued for one week beginning May 11th.

THE undergraduate session is now over, all lectures and practical work having ceased on April 30th. The examinations will begin on Monday, May 4th, and, it is expected, will be completed about the 25th. In the graduating class this year there are seventy-five students.

ONE of the interesting events of the session just closing was the visit of Dr. T. G. Brodie, professor of physiology, Toronto University, who during the week of March 23rd lectured here to the classes in physiology. Dr. Brodie's visit was very much appreciated and his lectures enjoyed by all who heard him.

IT is expected that examiners from Toronto University will take part in the examinations at McGill, while those from McGill will go to Toronto; this will be done this year only in anatomy and pathology, but it is hoped that later this interchange of examiners will be extended to many other subjects.

THE Department of Hygiene of the University of Toronto has undertaken to prepare and distribute various biological products. These include diphtheria antitoxin, tetanus antitoxin, anti-meningitis serum, and rabies vaccine for the Pasteur treatment. The prices of these products are to be only slightly above actual cost. The department has already entered into arrangements with the Provincial Board of Health of Ontario for the distribution of diphtheria antitoxin and rabies vaccine. The proceeds of the sale of these substances, after paying the cost of maintenance, will go toward aiding research in Preventive Medicine and Hygiene. Under the plan as it is arranged in Ontario all these biological products will be available at exceedingly low prices, and it is hoped that these prices can be reduced still further at a later date. The work will be under the direction of the members of the Department of Hygiene.

ONTARIO

THE annual convention of the associated boards of health of Canada will be held this year at Port Arthur and Fort William. The date has not yet been decided upon.

THE Toronto board of health has decided to hold a competition for plans of workmen's cottages. The competition is open to every one and the plans must be submitted before June 1st, next. It is suggested that the cottages, detached and semi-detached should be built by the city and should be rented to workmen.

THE Empire wing of the Kingston General Hospital was formally opened April 2nd. It has been built at a cost of \$60,000.

A SANATORIUM is being built at Freeport by the Berlin Tuberculosis Sanatorium Association. It is almost completed and it is expected that it will be ready for the accommodation of patients in about two months' time.

AN addition is to be made to the St. Joseph's Hospital at London. The plans call for an expenditure of about \$50,000.

ARRANGEMENTS have been made whereby the provincial board of health will supply diphtheria antitoxin to the local boards of health at reduced rates. The serum will be sold at 25 cents for 1000 units, 50 cents for 2000 units, \$1.25 for 5,000 units, and \$2.50 for 10,000 units. Syringe packages of these units will be ten cents extra in each case. Supplies will be sent to druggists and dealers at the same prices and to these prices they will be allowed to add 25 per cent. commission; they will also be allowed to return the antitoxin within twelve months. Druggists may obtain their supplies from the Department of Hygiene of the University of Toronto. Practitioners may obtain supplies from the local board of health, a local druggist, or from Messrs. Ingram & Bell, Limited, 256 McCaul Street, Toronto, or The J. F. Hartz Company, Limited, 456 Yonge Street, Toronto. Accounts to boards of health will be rendered at the end of each month, and will be collected from druggists by bank draft, terms net.

THE sum of \$125,000 is to be expended upon improvements to the Hamilton Hospital. A new laundry and a boiler house have already been built.

A convocation hall is to be added to the Woodstock Hospital for Epileptics. A workshop and a laundry will also be built. A grant of \$10,000 has been made for this purpose by the provincial government.

ACCORDING to the report just issued by Dr. Bruce Smith, there are in the province 89 public hospitals, 57 private hospitals, 37 refuges, 8 sanatoria for consumptives, 33 orphanages, 3 homes for incurables, and 31 county houses of refuge. During the year ending September 30th, 68,738 patients received hospital treatment, and 4,058 deaths and 4,210 births occurred. The amount expended on hospitals during the year was \$3,155,340, of which \$232,276 was granted by the provincial government.

MARITIME PROVINCES

THE Dominion government has appointed Dr. F. R. Gow to the post of chief medical officer and inspector for immigration at Halifax.

It is hoped that the St. John Infirmary, which is being built at St. John, New Brunswick, by the Sisters of Charity, will be ready for occupancy by the beginning of next June. The hospital is situated on Coburg Street and consists of an old residence which has been remodelled and a new building which has cost about \$100,000. The hospital has accommodation for about sixty patients and is intended to be non-sectarian.

THE Hazlewood Hospital for cases of tuberculosis, which was opened January 6th, at Halifax, can accommodate twelve patients. The beds have all been occupied ever since the sanatorium was opened and fifteen patients have already been treated. Three deaths have occurred but in each case the patients were in a very critical condition when admitted to the hospital.

THE new hospital for the Dominion Iron and Steel Company at Sydney, Nova Scotia, was opened March 19th. It will be remembered that the old hospital was burnt down some months ago.

CERTAIN amendments have been made to the New Brunswick Medical Act. The fee for matriculation is to be increased from \$5 to \$10; that for examination in medicine has been increased from \$10 to \$30, and that for registration from \$10 to \$40. Registered physicians are required to pay an annual fee of \$1; should they prefer to do so, instead of making this annual payment, they may now make a single payment of \$20.

QUEBEC

THE Fothergill gold medal of the Medical Society of London for 1914 has been awarded to Dr. John George Adami, professor of pathology at McGill University, for his work on pathology and its application to practical medicine and surgery.

THE outbreak of typhoid along the Richelieu River has abated and precautions have been taken to prevent a recurrence of the epidemic. The water supply at St. Johns, Iberville, Chambly, and Chambly Basin is being treated with hydrochloride and a water purifying plant is to be installed at Sorel.

THE plans are in course of preparation for a wing which is to be added to the Royal Victoria Hospital at Montreal. It will be called the Ross Memorial Pavilion and will be placed behind the présent buildings of the hospital. A small portion of the cost has been subscribed, but the greater part of the expense will be borne by Mr. J. K. L. Ross as a tribute to the memory of his father, the late Mr. James Ross. The new wing will provide accommodation for 150 private patients and will increase the total accommodation of the hospital to 475 beds.

ALTHOUGH the Montreal General Hospital has just been enlarged and its accommodation increased from 260 to 324 beds, it is impossible to admit many urgent cases on account of the lack of space. It is stated that, on an average, ten patients have been refused admission each day during the past winter.

MANITOBA

THE communicable diseases reported in Winnipeg during the past year are as follows: typhoid, 232 cases, 18 deaths; smallpox, 44 cases, 1 death; chicken-pox, 173 cases; measles, 361 cases, 15 deaths; scarlet fever, 1,288 cases, 45 deaths; whooping cough, 57 cases, 19 deaths; mumps, 44 cases; diphtheria, 281 cases, 34 deaths; erysipelas, 95 cases, 19 deaths; tuberculosis, 213 cases, 132 deaths.

THE plans have been prepared for an extension to the Brandon Hospital, but as they necessitate too great an expenditure the architects have been requested to prepare other plans. It is proposed to expend \$100,000 and to build a maternity home and

extend the mission building and the nurse's home. The hospital at present contains 100 beds.

ALBERTA

At the provincial convention of local improvement districts and rural municipalities, which took place in March, President Greenfield proposed that a resolution should be passed to suggest a better system of medical service for the rural communities. He referred to the practice in South Africa of subsidizing practitioners and nurses to live in remote districts and suggested that something of the sort might be done in Alberta, where it is frequently impossible for farmers, who live in out of the way places, to obtain medical assistance at a reasonable cost.

LAST year the sum of \$30,000 was voted by the ratepayers of Calgary towards a sanatorium for the treatment of cases of tuberculosis. It has now been decided to proceed at once with the building and steps are being taken to secure a suitable site.

It was decided at a meeting of the Calgary city council, held March 24th, that the medical inspection of the children in the public schools should be in charge of Dr. Mahood, the medical officer of health.

A GRANT of \$19,000 has been made by the city council to the Medicine Hat General Hospital. \$5,000 is to be devoted to current expenses and \$14,000 is to pay for some property purchased for the hospital. A by-law for the latter amount will be prepared and submitted to the ratepayers.

BRITISH COLUMBIA

A GRANT of \$2,000 has been made by the provincial government towards the construction of a hospital at Masset. The plans have been prepared for a building consisting of eight or nine rooms. It is hoped also to enlarge the hospital already existing at Masset for the use of the Indians and an application for financial assistance in this undertaking has been made to the provincial government.

A GRANT of \$225,000 was made recently to the Vancouver General Hospital by the provincial government. Of this amount

\$90,000 is to be expended on a building which at first will be used by McGill College until the college buildings now in course of construction are completed. The building will then become part of the hospital. The plans have also been prepared for certain alterations and improvements to be effected in the hospital itself, on which it is proposed to spend a further \$90,000.

THE Vancouver General Hospital has been granted the sum of \$100,000 by the provincial government. Next year this amount will be increased to \$125,000.

THE municipal grant to the Prince Rupert Hospital has been reduced from \$10,000 to \$7,000. It is possible, however, that the amount will be increased later on.

THE following are the members of the Council of the British Columbia College of Physicians and Surgeons: Dr. P. A. McLennan and Dr. A. P. Proctor, Vancouver; Dr. O. M. Jones and Dr. H. M. Robertson, Victoria and Vancouver Island; Dr. J. S. Birris, of Kamloops, Upper Kootenays; Dr. S. Bonnell, Lower Kootenays; and Dr. R. E. Walker, New Westminster.

A health congress and exhibition is to be held under the auspices of the Victoria Medical Society in connexion with the Dominion Exhibition.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Dominion Medical Monthly, April, 1914:

The modern treatment of gastric disease . . . H. J. Patterson.

The Canadian Journal of Medicine and Surgery, April, 1914:

Some reminiscences of the International
 Congress of Medicine, London . . . Fraser Harris.
 Ethical problems underlying the social
 evil P. H. Bryce.

Western Canada Medical Journal, March, 1914:

Vaccines and surgery	D. R. Williams.
Dirty hands	R. G. Eccles.
A note of warning against dishonest practices in the medical profession .	H. R. Shands.

The Western Medical News, March, 1914:

An interesting case of gall-stones .	J. Jordan Field.
Bovine tuberculosis and its relation to public health	M. P. Ravenel.
Nitrous oxide-oxygen anæsthesia . .	J. W. Turnbull.
Picric acid as a routine test for albumin .	_____

L'Union Médicale du Canada, March, 1914:

Cataracte diabétique	A. Plouffe.
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L'Union Médicale du Canada, April, 1914:

Cours de pédiatrie—Leçon d'ouverture .	R. Masson.
L'hygiène dans l'éducation	E. LeSage.
La chirurgie à la campagne	O. E. Desjardins and J. H. Raymond.

University of Toronto Medical Bulletin, April, 1914:

A case of traumatic amnesia	G. F. Boyer.
The result of treatment of syphilis as shown by the Wassermann reaction .	Gordon Bates and G. S. Strathy
The systematic diagnosis of progressive atrophy of muscles with the report of an unusual case of dessimated sclerosis	G. W. Howland.
Report of a case of specific cerebrospinal meningitis successfully treated by intra-spinal injections of antimen- ingococcic serum	W. B. Thistle.
Notes of a case of acute primary pyelitis, with remarks upon acute bacterial in- vasion of the kidneys	J. T. Fotheringham.
The diuretic action of theobromine and of theophylline	R. D. Rudolf.

- Nervous hypochylia with recovery—cardiac arrhythmia due to the administration of digitalis G. Chambers.
- Reflex irregular contraction of the stomach simulating hour-glass contraction—rupture of duodenum with complete duodenal fistula—recovery G. Bingham.
- Tendon fixation, a new operation for the prevention of paralytic deformities W. G. Gallie.
- Fracture of the wrist: analysis of the x-ray plates of a series of ninety-four cases E. Stanley Ryerson.
- A case of hæmatocolpos, with reference to the theories of causation and the arsenic content of the fluid A. C. Hendrick and H. S. Raper.
- Cæsarean section repeated on the same patient K. C. McIlwraith.
- A case of abscess of the temporo-sphenoidal lobe following acute otitis media G. Royce.
- Upon the reliability of the ordinary signs of acute cystitis G. Ewart Wilson.
- Report of a case of fracture of the pelvis, with rupture of the urethra E. Stanley Ryerson.

The Canadian Practitioner and Review, April, 1914:

- The therapeutics of radium R. Abbe.
- Typhoid inoculation W. B. Leishman.
- A case of primary focal hæmatomyelia, with a remarkably rapid recovery G. E. Wilson.

The Public Health Journal, April, 1914:

- Waste humanity E. R. Johnstone.
- We pay Lucy W. Brooking.
- The Nova Scotia League for the Care and Protection of the Feeble-minded Mrs. Stead.
- Mental defectives in Alberta R. B. Chadwick.
- Mentally defective pupils in the public schools of Toronto R. H. Cowley.
- Feeble-minded women in houses of refuge J. McNeillie.

An old text	Mrs. Shortt.
The problems of the feeble-minded	Mrs. Cummings.
Feeble-mindedness—a municipal problem .	D. M. Cameron.
The feeble-minded and social evils	G. S. Strathy.
Municipality responsibility	Controller McCarthy.
The feeble-minded and crime	J. E. Farewell.
Rural cold storages, a scientific and economic necessity	P. H. Bryce.

Medical Societies

AMERICAN ASSOCIATION OF PATHOLOGISTS

THE fourteenth annual meeting of the American Association of Pathologists and Bacteriologists was held in Toronto on April 10th and 11th. Prof. J. J. MacKenzie, of Toronto, president of the Association, occupied the chair. The meetings were held in the new Toronto General Hospital, where the association was entertained at luncheon by the authorities of the University of Toronto and of the General Hospital. About one hundred members of the society were in attendance, as well as twenty or more guests. From a scientific standpoint the papers read were of a high order. One marked feature of the programme, and one which indicates the tendency of pathological research, was the preponderance of experimental and bio-chemical topics discussed. Of sixty-six papers all but six or eight dealt with subjects treated from the standpoint of pathologic physiology.

The American Section of the International Association of Medical Museums met on the day preceding the meeting of the Pathologists. The president, Prof. R. M. Pearce, of Philadelphia, was in the chair. About fifty members were in attendance, and an interesting programme was carried out along the lines of museum research work and methods of teaching and technique. Among those contributing were Drs. W. M. L. Copeland, Howard Kersner, J. H. Hewitt, S. J. Peirce, R. P. Strong, H. Gaylord, R. H. Malone, J. G. Fitzgerald, and Oskar Klotz. A good collection of exhibits illustrating the papers presented, both at this meeting and at the meeting of the Pathologists, was shown. A gift of \$5,000 from the late Lord Stratheona to the International Association was announced. The secretary, Dr. Abbott, reported on the very successful meeting in conjunction with the Congress of Medicine in

London last year, and read the address of the international president, Prof. Aschoff, of Freiburg, recommending a propaganda for increased membership throughout the world and the organization of the national sections in closer connexion with the pathological and anatomical societies.

The American Society for Cancer Research also met on April 9th at the Toronto General Hospital. There was a good attendance and an important programme was presented.

TORONTO ACADEMY OF MEDICINE

THE monthly general meeting of the Toronto Academy of Medicine was held on Tuesday, January 6th. On this occasion Colonel G. Carleton Jones, the director-general of the Canadian Medical Services, delivered an address on the relation of the medical profession to the defence of the country. Colonel Jones quoted the words of Sir Ian Hamilton, "In Canada the medical corps keeps well ahead of every other branch of the services in completeness of preparation for war, a state of affairs due largely to the whole-hearted support it receives from the medical profession in all its grades. A militia is, or ought to be, an expression for purposes of war of every form of national activity." He referred to the fact that the Canadian army is a national army by virtue of the Militia Act, which states that all male inhabitants of Canada, with certain exemptions, are liable for military service in case of war, and laid great stress upon the importance of being prepared for war. Colonel Jones reminded his hearers that in 1899 there was no organized medical service in the Canadian militia and that, although great progress had been made since then and although there are now seven hundred medical officers and nineteen hundred non-commissioned officers and men in the service, should war occur it would be impossible to meet the demand. The medical requirements would be all the greater since the troops would be undisciplined and untrained. Moreover, in Canada, the larger centres are near the border and on the sea coast, and therefore arrangements for the care of the sick and wounded would have to be made at smaller places and every community would have to supply some assistance. Thus, the matter is one that should interest each individual and this interest it is the duty of the physician to encourage. What medical society in Canada, he asked, has carefully considered the question of a Canadian war? What medical faculty has taken steps to inculcate the duties I have mentioned in the minds of its medical

students? What hospital staff has thought out or even given a passing thought to what their duties would be in war time, and how their present duties and capacities fitted them for the greatest task that would ever be placed upon them?

In opening the discussion, Lieutenant-Colonel G. C. Foster pointed out that, among other things, much assistance could be given by medical men in aiding the work of the St. John's Ambulance Association or the Canadian Branch of the Red Cross Society. He referred to the shortness of the period of training and hoped that after the meeting many applicants would be forthcoming for the posts of officers in the Canadian Militia.

Dr. Fotheringham detailed the duties of the medical corps and brought to the notice of the Fellows the special reasons which make it necessary that an efficient army should have a well-organized and efficient medical service.

Dr. D. W. McPherson did not think that medical men had done their duty in assisting the medical services of the militia. He considered that a change of duty from that of ordinary practice to medical work in the militia was beneficial and he advised men to join if merely for the training they would receive.

The importance of such training was emphasized by Dr. G. Stirling Ryerson, who referred to the difficulties experienced by the ordinary medical man if transferred to the army without preparation, owing to his lack of knowledge of army regulations and discipline. In his opinion, it would be impossible for any country to maintain a medical service in time of peace that would be sufficiently strong in time of war, as the consequent taxation would be too great a burden upon the people. He recalled past experiences and insisted on the necessity of being prepared for war.

Dr. C. R. Dickson, secretary of the Canadian Red Cross Society, gave an interesting account of the work of the society. He stated that there were three thousand persons in Canada who were members of the society and who were ready for action at any moment.

The discussion was continued by Dr. N. A. Powell, Dr. Albert Macdonald, and Dr. Duncan Anderson. Dr. Macgillivray moved a vote of thanks to Colonel Jones and to Colonel Foster for their visit to the Academy; this was seconded by Dr. Marlow. Colonel Jones replied shortly to the discussion and thanked the President and Fellows of the Academy for the vote of thanks they had accorded him.

At a recent meeting of the Pædiatric Section of the Toronto Academy of Medicine, the discussion centred on Dr. W. H. Pepler's report in December, 1913, of a case of intussusception and on his remarks in reference to the early diagnosis of such a condition.

Dr. W. E. Gallie, discussing Dr. Pepler's paper said, that from a surgical standpoint there were two or three points of great interest in this case. There was the fact that the child was under one year of age. At this early age the operation of laparotomy was a serious one and showed an extremely high mortality. One would therefore hesitate to operate unless the symptoms pointed definitely to urgent need of surgical interference. Dr. Gallie had operated on Dr. Pepler's case after it was sent to the Children's Hospital, and although there was no tumour, that could be made out by physical diagnosis, present in the abdomen, he found on operation an intussusception nine inches long and two inches thick. One could hardly believe a tumour of this size could be present and yet not be palpable, and although he had examined and palpated the abdomen two or three times in succession to discover internal enlargement he found none. Even after anæsthetizing the patient, on examination no tumour was found. On opening the abdomen, he found the enlargement tucked up under the liver and lying at the back of the abdominal cavity. One sign of great importance to the surgeon when these cases are presented for operation is the character of the blood in the stools. From the usual statements found in the text-books one would expect to find a stool showing mucus streaked with blood, but the condition is a mucus stool tinted with blood. It is this pinkish tinge that is so characteristic of intussusception. Dr. Gallie was not sure that this child's life could have been saved if it had been operated on earlier, but there is no doubt, if one is going to save life by surgical interference in these cases, a very early operation is necessary. He had looked up the Children's Hospital reports of operation on intussusception cases during the last ten years, and had found that the cases operated upon during the first twenty-four hours showed that intussusception could then frequently be reduced. From these reports, and in his own experience with small infants, it was found that those cases where the intussusception was reduced only with great difficulty and where resection of the intestine was required, were attended with a very high mortality. Referring to the case under discussion, Dr. Gallie said he was unable to reduce the tumour completely. He had reduced it from nine inches to the size of the specimen shown at the meeting, a tumour of two or three inches in length. Dr.

Gallie said that he had learned a great deal from this case and would face another such condition with less hesitation with regard to operation. If such a case came into the hospital now, he would not wait twelve hours doubting the possibility of intussusception because of the absence of abdominal tumour.

Dr. Harold Parsons, chairman of the Section, said there were several very important points to be considered in connexion with these cases, and he hoped these points would be fully discussed. There was the question of the tumour and the question of the difficulty of diagnosis, although in regard to treatment there was no difficulty. Dr. Parsons said it was very difficult in private practice to get the consent of the parents to operate on a child five or six months of age.

Dr. MacDonald agreed with Dr. Parsons that it was very difficult in private work to get the parents' consent to these operations on children under two years of age. In the two cases he had of this sort, the stools were not blood-stained, they were merely tinged a little with blood. In one of these cases the tumour could be readily made out by palpation.

Dr. John L. Bray agreed that the important point in these cases was to make a diagnosis early. If one had the clinical picture of a case of intussusception in mind, it was fairly easy to make an early diagnosis. The most important feature in these cases was straining at stool, also the character of the stool. The only disease to differentiate the condition from is dysentery, and intussusception differs so from dysentery that it is not difficult to decide which of these conditions one is dealing with. In dysentery the motions are very foul, whereas in intussusception usually they are not so. In intussusception the difficulty is merely a mechanical one and the discharge is due to obstruction in the bowels. The blood in the stools is a result merely of capillary oozing. The disease resembles dysentery in that in both diseases the child strains at stool, but if one examines the stool a diagnosis is easy. The treatment is surgical and there is no use wasting time trying any other treatment. Dr. Bray had seen a little girl, five or six years of age, sitting on a chamber in her room. She was very ill, but did not look like a child sick with dysentery. Several consultants saw this case, but failed to diagnose it. As the child was vomiting, it was thought her trouble was of brain origin instead of an abdominal condition. The child's abdomen was opened and the cause of her illness was found to be worms, one of which had eaten through the bowel.

Dr. Bray reported another case, that of an infant a little over two months old. This child, a breast-fed infant, had persistent vomiting and free stools with considerable straining. The discharges were made up principally of brown mucus, but no blood. The child was examined and there was no indication of intussusception and no tumour to be felt either by palpation of the abdomen or by examination per rectum. As the vomiting and stools continued, a surgeon was consulted. He was of the opinion that there was a tumour in the right iliac fossa. The abdomen was then opened and a search made for the tumour, but no tumour was found. After searching for some time it was discovered that the pyloric orifice of the stomach was almost cartilaginous. It was very, very rigid. Gastro-enterostomy was done and the child made a very good recovery, but died later from some other disease.

One speaker referred to the fact that the case of intussusception under discussion by Dr. Pepler was one of intussusception into the colon as was the case referred to by Dr. Bray. When there is intussusception higher up there is no straining at stool. He believed that it was the cases of intussusception high up that were difficult to diagnose. Another point to take into consideration is the fact that intussusception comes on sometimes as a result of diarrhoea with a severe colitis of a membranous type. There is often a markedly swollen colon which feels like a sausage, but here there would be no mass to be felt per rectum. He said intussusception was an acute disease and reported the following case:

A child took sick at ten o'clock one morning. It had the appearance of shock such as one would expect in perforation. Some time after the straining at stool commenced the symptom of vomiting was added. There was nothing in the rectum, and there was no abdominal tumour. The patient was removed to the hospital at twelve o'clock at night and fourteen hours afterwards was operated on; the small bowel had passed from the cæcum into the colon some sixteen or eighteen inches, but there was no tumour present. The intussusception was quite easily reduced after the laparotomy. The child was eight months old. It is always a good idea to give an injection per rectum as a good many have been cured by this method. After operation this child got around nicely in a few days.

Dr. Pepler in reply said he saw only one motion the child had passed, and this motion showed quite a quantity of mucus. In addition to the mucus there was a distinct tinge of blood and some of the mucus was streaked with blood. He did not see anything

of the peculiar dark or purplish appearance spoken of. He had not noticed any symptom of shock in this patient, and in other cases he had seen and had reports of, there was nothing suggestive of shock in the early stages. Later on when there is the long invagination with stretching of the bowel there is severe shock. In the early stages of intussusception there is no shock and there is no tenesmus.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE ninth regular meeting of the society was held Friday, February 6th, 1914, Dr. D. F. Gurd, president, in the chair.

LIVING CASES: 1. Anterior metatarsalgia, by Dr. A. MacKenzie Forbes.

Dr. Forbes exhibited the second case of this condition which he reported at the last meeting of the society. The patient had been operated on three months ago and showed excellent results.

2. Rodent ulcer of the inside of the nose, cured by radium. Dr. A. H. Pirie. Twenty-two years ago patient had an ulcer on the outside of the nose which was operated upon eleven years later and disappeared for some time. It grew again both inside and out and was cut out two years ago. There was again recurrence and the patient came for x-ray treatment. There was a mass the size of a green pea in the inside upon which the x-rays had no effect, as they could not be directed upon the swelling. After two months' treatment with radium the inside growth disappeared as well as the outside.

DISCUSSION: Dr. G. E. Armstrong: I have had quite a number of cases of rodent ulcer treated very satisfactorily with radium; one, an old man, where the patch measured one inch or more in all directions and had eaten away part of the side of one nostril. He returned to the hospital two years after treatment with the nose well but with a patch on the cheek.

Dr. Fraser B. Gurd: How soon after the application is the effect noticeable? I was told by one physician that in a case he was treating it took twelve days. This was a case of cancer of the cervix which he hoped to make operable after the application of radium for twenty-four hours. In other cases he had seen it wither away.

Dr. A. H. Pirie: If one lays radium on the skin it will take from seven to fourteen days before the reaction takes place. In my case the application was continued over four weeks, when the swelling was practically gone.

PATHOLOGICAL SPECIMENS: Series by Dr. L. J. Rhea.

1. House maid's knee.

2. Portion of liver, right lung, and a thick firm mass of scar tissue which extended from the region of the kidney up behind the liver and under the diaphragm which is very greatly thickened. Removed from a man aged forty-nine, who for four years suffered from symptoms clinically of chronic nephritis. Patient had but one kidney that functioned, that was markedly hypertrophied and showed a chronic and acute nephritis. In the situation of the other kidney there is a stone which conforms very much in its outline to the pelvis of the kidney. The pelvis in which this stone was placed drained into the bladder through a greatly thickened ureter. The man gave absolutely no history referable to any lesion of the kidney but there evidently had been one, followed by a perinephritic abscess which extended upward and left a subdiaphragmatic lesion on the right side.

3. Kidneys showing acute and chronic nephritis most marked in glomeruli. Septic process in lung, area of pneumonia in centre of which is a lung abscess. Larynx, just at vocal cords is a small opening through mucous membrane into a collection of pus and bone is eroded. Patient aged forty-eight, showed clinically bronchitis, marked enlargement of heart, dyspnoea, slight swelling of one ankle joint. Bronchitis subsided, laryngeal trouble began, loss of voice, became aphonic, had stridor, pain in throat. Three days before death developed temperature, respirations rapid, pulse 160, and at base of left lung dulness with broncho-vesicular breathing, two chills, death.

DISCUSSION: Dr. J. G. Adami: I take it that the abscess in the larynx is a suppurative perichondritis. I would ask Dr. Rhea if he would regard that as the earlier condition and consider the pneumonic patch as an inhalation pneumonia secondary to discharge of the abscess into the larynx, the glomerulitis being an indication of a later bacteriæmia? Of course here we deal with a succession of changes all due to infection by the one organism, the streptococcus.

Dr. L. J. Rhea: The lesion in the lung is certainly more recent than that in the larynx and we interpret that as secondary to aspiration pneumonia. Whether the lesion in the kidney is secondary to the lesion in the throat is difficult to say, though I believe clinically the symptoms in the throat came on after the recent attack of the acute lesion in the kidney.

Dr. F. G. Finley: When the man first came in he presented

evidence of a chronic condition in the kidney and then the larynx condition developed, and, just before he sank, there was an acute exacerbation, chills, etc., from the lung abscess.

CASE REPORTS: 1. Diverticulum of the bladder, by Dr. J. W. Hutchinson.

2. Three cases of gastric neuroses, by Dr. G. S. Mundie.

(1) Woman aged twenty-two, stenographer, complains of difficulty in swallowing, pain in stomach, nervousness, for six months since coming to Canada. Food goes down half way and then seems to stop, though it eventually goes down all the way. Was treated for gastric or oesophageal ulcer by several doctors. History reveals the fact that seven years ago her mother had gastric pain and vomiting and patient nursed her mother. Evidently at that time this made an impression on the patient's mind and now, coming to this country a stranger and getting run down in health, she had developed this neurosis. Under suitable conditions she is improving rapidly.

(2) Woman aged seventeen, Jewess, doing house and office work, complains of vomiting. For several years has been troubled with these attacks occurring two or three times a year and lasting for two weeks. Vomited immediately after eating; soreness and heart-burn for some time, and vomitus consisted of food taken, no blood. Also suffered from headaches, not relieved by glasses. Family history revealed the fact that her father was divorced from her mother, the child staying with the mother. Later she returned to the father, who had married again, and was compelled to work hard, there being several children in the house under her care. With rest and treatment in the hospital her condition improved and the vomiting ceased. On her return home, however, it occurred again.

(3) Woman aged twenty-eight, office work, complains of diarrhoea, pain in abdomen, flatulence, weakness and nervousness. She has been under treatment many times. In 1907 operated on for gall stones, one small stone found in cystic duct; in 1908 gastric adhesions were broken down, and the same year a gastro-duodenostomy performed although the diagnosis was gastric neurosis. On examination at present nothing organically wrong; patient very hysterical. History given that father had left her mother and had gone to live with another woman, and her mother had treated her very badly. She had an attack of aphonia on landing in this country and has had two or three attacks since. There are jerkings and twitchings of the body which have continued for several months. Nurse found the patient one day perfectly still, and asking her about this she declared she had just decided to stop. The diarrhoea and vomiting

continued, however. She died January 13th, and the post mortem showed absolutely nothing to account for the condition. It was a functional disease resulting in death.

These cases illustrate how careful one must be in telling a nervous patient they have a gastric ulcer or other similar condition, and also that one should look carefully into the history, six, or even ten, years back for some reason that might account for the present condition. It must be remembered that the emotions play a large part in these conditions and that drugs will not cure the patient but that one must treat them from a psychological standpoint.

Dr. F. G. Finley: We all see cases of hysterical vomiting now and then and wish that we knew what we could do with them. I have observed several cases in which acidosis occurred as the result of starvation. One young woman refused food for some time, had vomiting, and became very ill with an attack of urgent dyspnoea, collapse of pulse, and an examination showed acidosis. I have had one or two other cases showing a similar condition of acidosis though not so severe. This may be the cause of death in some of these cases.

PAPER: "Autoinfection from intestinal stasis," by Dr. G. E. Armstrong. (See page 373). Dr. Pirie illustrated Dr. Armstrong's paper by a series of slides of *x*-ray plates showing stasis in various parts of the intestine from the stomach, jejunum, ileum, cæcum, appendix and colon.

Professor A. C. Geddes, of the anatomical department of McGill University, discussed the various developmental conditions that may arise and be a cause of intestinal stasis. In summing up, Professor Geddes said that the teaching of anatomy is that intestinal stasis is likely to be caused either by developmental failure in the gut itself, or in the mesentery, or as the result of prenatal adhesions; or, it may be due to subinfection leading to adhesions, or to a series of displacements which belong to the degenerative part of life and which are found both in the male and female, more especially in the female because her abdominal musculature is more subjected to destroying influences.

Dr. J. G. Adami: This subject of intestinal stasis is so large that there are very many points I should like to take up and discuss, for the views regarding it appear to be in a terrible muddle. I should, in the first place, like to make a protest against the opinion promulgated by Sir Arbuthnot Lane, Keith, and Barclay Smith, that the large intestine is a cesspool. In contradiction I would say that we have a functional organ, and the very existence of the

ileo-cæcal valve and the arrangement of the different sections of the large gut indicate function, while, as Dr. Armstrong has pointed out, we have evidence that it is an excretory organ. I am strongly against the view that under normal conditions this is the main site for putrefactive changes in the chyme. The extraordinary manifolding of the mucosal surface of the whole length of the small intestine by means of villi, their absence in the large intestine, the experiments on the absorption of fats, etc., indicate that the small intestine is the chief site of absorption of food stuffs. The evidence afforded by Hertz concerning physiological stasis in the lower end of the ileum and the extraordinary development of the protective lymphoid mechanism in this same region points strongly to deleterious absorption being largely liable to take place there rather than in the colon. Compared with the ileum, the cæcum has relatively inconsiderable lymphoid mechanism, and this decreases as we descend the large intestine. It is in the lower end of the ileum that there is the greatest danger from bacterial activity. The progressive concentration of the chyme in its conversion into the more solid fæces in itself arrests bacterial growth. We have the extraordinary fact that while from one quarter to one third of the solid fæcal matter is composed of bacteria, the vast majority of these are dead. The healthy stool affords in fact relatively few colonies. In opposition to Dr. Armstrong's statement that the main production of indol is in the large intestine, I would point out that dry scybala can afford abundant indol without there being a trace of indican in the urine, and also that indicanuria is most marked when there is obstruction or inflammation of the upper part of the small intestine. So far as they go, the indications are that, unless there be serious inflammatory changes in the large intestine, there is not much absorption of deleterious dissociation products in the food in this viscus.

From another point of view I wish to emphasize what I have already urged elsewhere, namely, that a study of this subject demands the fullest coöperation between the surgeon and the laboratory worker. It is no use to think or to talk of "auto-intoxication." What we need is to work until we obtain the true cause of these various symptoms and more or less chronic diseases. That there is a relationship between their development and previous chronic states of intestinal stasis we must, I think, all be ready to admit. But this admission would not necessarily mean that stasis is the only cause of these conditions, still less that they are of toxic origin. For thirty years, since Brieger discovered the pto-

maines, workers upon alimentary intoxication have been hard at work testing one or other protein dissociation product. Dr. Armstrong claims that very little has been done upon this subject: much has been done; it is the result that has been little. The abundant negative findings indeed are rather remarkable. So far with indol introduced in large quantities symptoms have been gained similar to those met with in simple constipation. Even then though it might be objected that the dose required to obtain these symptoms is so large that it is difficult to believe that this alone can be the cause. I would urge once again what I have for long years held, that these chronic disturbances are set up not by intoxication—by the absorption of toxic substances from the intestines—but are the results of recurrent low infection, or as I have termed it, “subinfection.” The pouring out of increased numbers of leucocytes from the inflamed mucosa into the lumen of the gut results in an increased return of these leucocytes through the mucosa laden with intestinal bacteria. These bacteria, so introduced, with low pathogenic properties, will not multiply, but, in the lymph nodes and elsewhere undergoing destruction, liberate their toxins in the process. More particularly the chronic fibrosis, the fibroid disturbances of the various organs is brought about by the local action of these toxins upon the higher cells of the tissues, and the stimulation of the lower connective tissues. There could be no stronger support of these views than the recent experimental production of rheumatic myositis by Rosenow, who has demonstrated conclusively that organisms of the streptococcus viridans type, arrested in the muscle capillaries, multiply until such time as a local reaction is set up, and following ingestion of the streptococci by the endothelial cells lining the capillaries, their digestion and destruction results in necrosis of the muscle fibres in the immediate neighbourhood, the process being due evidently to diffusion of the toxins. It is this local necrosis that precedes the development of fibrous tissue. Only I would repeat, this entrance of bacteria, saprophytic upon the surface of mucous membranes, may occur in several regions—from the tonsils in tonsillitis, from the gums in pyorrhœa alveolaris, from the peribronchial glands in respiratory affections like tuberculosis, from the urethra in gonorrhœa, and—instead of talking of autoinfection or autointoxication, as ascribing all to intestinal stasis—each individual case must be studied by the surgeon or physician in combination with the expert laboratory worker; each case must be traced to its cause. Then and only then shall we have a sure basis for advising short circuiting

or other treatment—in the absence of recognisable kinks and obstructions, which of course call for surgical interference.

Dr. A. E. Garrow: Dr. Armstrong stated that, in one of his recent cases that he had short circuited, he had removed the colon. I would like to ask what has been his experience with respect to this particular phase of short circuiting, whether it has been associated with evidence of regurgitation of fæcal matter back through the ascending and transverse and descending part of the large bowel. Three years ago, in discussing the subject with Sir Arbuthnot Lane and more particularly with several London surgeons who had been following the work, the frequent necessity of doing a second operation was mentioned. The remark was made that cases had been returning at the rate of two or three a week to have the large bowel removed after short circuiting operations. My own experience is limited except for cancer of the sigmoid, two cases, in both of which there was distinct mechanical obstruction, not malignant, and in one of these I have had, after an apparent satisfactory improvement, some rather distressing abdominal symptoms.

Professor F. R. Miller of the physiological department of McGill University discussed the nervous mechanism in connexion with the gastro-intestinal tract.

Dr. G. E. Armstrong: I have tried to put the matter in a judicial way. I have been in touch with Sir Arbuthnot's work for a good many years, and I had never been sufficiently impressed to undertake it until I began the series of cases here reported, all of which are operations that I have done. From my experience I should say that the procedures justify a further trial in selected cases. I do not think the time has come to advocate short circuiting in a general way or in any large group of cases, but I think that there are certain cases in which it is worthy of a further trial before we decide what its value is, and it is with that object that I read this paper to-night and that we try to bring forward the principles which should govern us in this work. We have the bacteria in the digestive fluids of the mouth, stomach, and intestines, and we have the mechanical condition associated with the ileo-cæcal valve, this I believe is an important thing and I think the question is worth further study and observation. These three distinct influences are before us for further study and, personally, I am not prepared to come to any conclusion other than that I have stated. Dr. Garrow raised the question of regurgitation into the colon. The case that I operated on to-day was the first that I had opened after short circuiting. Here was a girl who for eight years had had every form of treatment

carefully carried out and it had accomplished very little, and the chances were that she would go on year by year getting worse. I felt that it was a fair proposition in the face of the statement that good results follow colectomy. When I opened the abdomen the colon was empty, the transverse ascending colon and cæcum showed no evidence of regurgitation backwards. Lane has found that under thirty years of age it has not been necessary to remove the colon but that after that age it has sometimes been found necessary on account of regurgitation backwards and continued absorption of toxic materials. I feel a certain responsibility in discussing a paper of this kind. It is before the world. We have to consider it, and I think the best way to consider it is to take up the subject in all its bearings, look at it from all sides, and try to give it a thorough sifting before we come to any definite conclusion.

ONTARIO MEDICAL ASSOCIATION

At the annual meeting of the Ontario Medical Association to be held in Toronto on May 26th, 27th, and 28th, Dr. E. Libman, of Mount Sinai Hospital, will deliver the address in medicine on "Subacute Endocarditis." The address in surgery will be given by Dr. Finney, of Baltimore, who will speak on "Some of the causes of failure in operation for gallstones." The programme is largely clinical, interesting cases of every description being shown at the hospitals. Many operations are also planned. On the last afternoon the association will be the guests of the Ontario Jockey Club at the Woodbine races.

CALGARY MEDICAL SOCIETY

THE annual meeting of the Calgary Medical Society took place on Tuesday, April 7th. The officers elected for the year 1914-1915 are: president, Dr. G. Johnston; vice-president, Dr. H. McGill; secretary, Dr. J. L. Allen; treasurer, Dr. E. B. Roach; executive committee, Dr. McEachren, Dr. Clark, and Dr. Costello.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Dr. H. A. McCallum, London, Ont. President-elect—Dr. Murray MacLaren, St. John, N.B. Secretary-treasurer—Dr. W. W. Francis, 836 University Street, Montreal.

Annual Meeting, St. John, N.B., July 7th, 8th, 9th and 10th, 1914.

ACADEMY OF MEDICINE, TORONTO:—President—Dr. R. A. Reeve. Secretary—Dr. Harley Smith.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. J. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.

Annual meeting, Vancouver, June 19th and 20th, 1914.

CALGARY MEDICAL SOCIETY:—President—Dr. G. Johnston. Secretary—Dr. J. L. Allen.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—Dr. J. G. Adami, Montreal. Secretary—Dr. George D. Porter, Ottawa.

Annual meeting, Halifax, July 13th and 14th, 1914.

CANADIAN HOSPITAL ASSOCIATION:—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. N. E. Brown, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—Dr. C. A. Hodgetts. General Secretary—Major Lorne Drum.

CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY:—President—Dr. J. S. Murray, Okotoks. Secretary-treasurer—Dr. G. E. Learmonth, High River.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—Dr. J. W. T. Patton, Truro. Secretary—Dr. H. V. Kent, Truro.

EDMONTON MEDICAL SOCIETY:—President—Dr. J. S. Wright. Secretary-treasurer—Dr. Jamieson.

ELGIN COUNTY MEDICAL ASSOCIATION:—President—Dr. Frederick McEwen, Aylmer, Ont. Secretary-treasurer—Dr. A. B. Riddell, Bayham.

FRASER VALLEY MEDICAL SOCIETY:—President—Dr. DeWolfe Smith. Secretary—Dr. D. F. Carswell.

HALIFAX MEDICAL ASSOCIATION:—President—Dr. Kirkpatrick. Secretary—Dr. MacIntosh.

KINGSTON MEDICAL AND SURGICAL SOCIETY:—President—Dr. W. G. Anglin. Secretary—Dr. W. T. Connell. Treasurer—Dr. G. W. Mylks.

LONDON MEDICAL ASSOCIATION:—President—Dr. C. H. Reason, 538 Dundas Street. Secretary-treasurer—Dr. L. S. Holmes, 260 Hamilton Road.

LUNENBURG-QUEEN'S MEDICAL SOCIETY:—President—Dr. J. W. Smith, Liverpool. Secretary—Dr. L. T. W. Penney, Lunenburg.

MANITOBA MEDICAL ASSOCIATION:—President—Dr. J. Halpenny, Winnipeg. Secretary—Dr. Ross Mitchell, Winnipeg.

MEDICINE BAT MEDICAL SOCIETY:—President—Dr. O. Boyd. Vice-President—Dr. H. Orr. Secretary-treasurer—Dr. W. Knight.

MONTREAL MEDICO-CHIRURGICAL SOCIETY:—President—Dr. D. F. Gurd. Secretary—Dr. Hanford McKee.

NEW BRUNSWICK MEDICAL SOCIETY:—President—G. Clowes Van Wart, Fredericton. Corresponding Secretary—D. C. Malcolm, St. John.

NOVA SCOTIA MEDICAL SOCIETY:—President—Dr. G. E. DeWitt. Secretary—Dr. J. R. Corston.

ONTARIO MEDICAL ASSOCIATION:—President—C. F. McGillivray, Whitby. Secretary—Dr. F. A. Clarkson, 421 Bloor Street West, Toronto.

Annual Meeting, Toronto, May 26th, 27th and 28th, 1914.

OTTAWA MEDICO-CHIRURGICAL SOCIETY:—President—Dr. J. R. O'Brien. Secretary—Dr. R. K. Paterson.

OTTAWA MEDICAL SOCIETY:—President—Dr. Charles W. Gorrell. Secretary—Dr. A. MacLaren. Treasurer—Dr. Harold Alford.

PERTH MEDICAL ASSOCIATION:—President—Dr. A. F. McKenzie, Monkton. Secretary-treasurer—Dr. F. J. R. Forster, Stratford.

PETERBORO MEDICAL ASSOCIATION:—President—Dr. E. A. Hammond. Secretary—Dr. J. B. Mann.

PICTOU COUNTY MEDICAL ASSOCIATION:—President—Dr. C. S. Elliot, Stellarton. Secretary—Dr. John Bell, New Glasgow.

PRINCE EDWARD ISLAND MEDICAL ASSOCIATION:—President—Dr. A. A. MacDonald. Secretary—Dr. W. J. MacMillan, Charlottetown.

REGINA MEDICAL SOCIETY:—President—Dr. Gorrell. Secretary—Dr. Dakin.

ST. JOHN MEDICAL SOCIETY:—President—Dr. D. Malcolm. Secretary—Dr. F. P. Dunlop.

SASKATCHEWAN MEDICAL ASSOCIATION:—President—Dr. G. R. Peterson, Saskatoon.

SASKATOON MEDICAL ASSOCIATION:—President—Dr. Geo. R. Morse. Secretary-Treasurer—Dr. R. H. MacDonald.

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The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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The Blood-forming Power of Sanatogen as evidenced by the Percentage Increase in Haemoglobin and the Count of the Red Blood Corpuscles.

Medical literature, during the last few years, has recorded many specific instances of the remarkable blood-forming power of Sanatogen.

A striking illustration of this fact is furnished in the accompanying diagram, based on observations made by Dr. Starkloff, of the Consumption Sanatorium, Belzig, and published in *Zeitschrift für Tuberkulose*, No. 6, 1911.

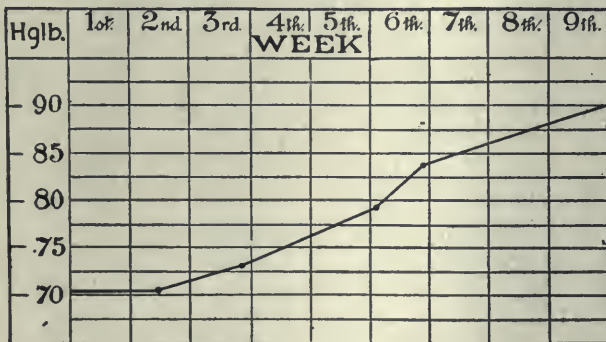
The diagram shows the average increase in the hæmoglobin content of

the blood during nine weeks, based on the analyses of thirteen patients.

It proves that during the whole period—from the middle of the second week, when the influence of Sanatogen began to make itself felt, until the end of the ninth week, when the administration of the preparation was discontinued—there was an uninterrupted rise in the hæmoglobin value from about 71 per cent. to 90 per cent., or, roughly, 20 per cent. for the period.

AVERAGE HAEMOGLOBIN INCREASE

from Observations made by Dr. Starkloff at the Consumption Sanatorium, Belzig.



Conclusive as is the evidence furnished by the diagram, its importance is considerably emphasised by similar results recorded in English periodical literature.

Thus, in *The General Practitioner*, the author of an article records the following cases: (1) A girl of 17 was suffering from right supra-orbital neuralgia of considerable intensity. The red corpuscles numbered 3,900,000 per c.mm. and the hæmoglobin value was 40 per cent. She took Sanatogen for twenty-one days, when her red corpuscles numbered 4,200,000 per c.mm. and the hæmoglobin had risen to 56 per cent. She made a quick recovery.

(2) A fair-haired girl, aged 12, suffering from a fourth attack of chorea, showed red corpuscles numbering 3,600,000 per c.mm., with hæmoglobin 49 per cent. At the end of a month

the red corpuscles numbered 4,500,000 per c.mm., the hæmoglobin 55 per cent., and the choreic movements had entirely disappeared.

Again, in *The Medical Press and Circular*, the writer of an article records this case:—

A woman, suffering from melancholia, who took to her bed after sustaining a severe shock from the sudden loss of her favourite child, showed red corpuscles numbering 3,800,000 per c.mm., with hæmoglobin 48 per cent. At the end of a fortnight's treatment with Sanatogen, her red cells had risen to 4,000,000 per c.mm. and hæmoglobin to 52 per cent. Her mental equilibrium was restored and she was able to resume her home duties. The physician recording the case states: "The improvement in this case was most striking and suggestive."

The Canadian Medical Association Journal

VOL. IV.

JUNE, 1914

No. 6

THE DEVELOPMENT OF OBSTETRICS

By B. P. WATSON, M.D., CH.B., F.R.C.S.E.

Professor of Obstetrics and Gynæcology, University of Toronto

ONE of the characteristics and charms of university life is its division into terms and sessions, each with its definite work apportioned to it, and each at once complete in itself, and yet forming part of the great whole, which constitutes the full curriculum. At the completion of each session, when the strain of teaching and of studying, of examining and being examined, is over, we suddenly relax, and with a comfortable feeling of leaving behind us the year's work well done, and of taking away with us something new added to our store of knowledge, we enjoy our holiday as few others can. Brains exhausted and staled by close application to a more or less limited field of thought have time to recuperate, not—let us hope—by lying fallow, but by being cultivated in other directions. For with the brain, as with the body, the best holiday is a change of work.

The weeks of vacation go quickly by, and almost before we realize it we stand again, as we do to-day, on the threshold of a new session. This time too brings with it its own peculiar sense of exhilaration. We return mentally and physically fit. Tasks which seemed a burden a short three months ago can now be cheerfully faced. We are eager for work, and can look forward with confidence to the future.

It is in such a spirit that we meet to-day, and for that reason it is a singular privilege, accorded me through the courtesy of my colleagues, to address you on this occasion. I welcome the privilege

An inaugural address to the students of the Faculty of Medicine, University of Toronto.

the more, as it gives an opportunity of expressing more publicly than I have yet been able to do my appreciation of the high honour done me in my election to the Chair of Obstetrics and Gynæcology in the University of Toronto. I was proud of my position a year ago, and I am, if possible, still prouder of it to-day, when I have had time to realize even more fully than I did then, the high position which the Toronto Medical School occupies, and the great future which it has before it. In proportion as this feeling has grown, so has my sense of the responsibility of my position increased.

In the ancient universities of the Old World the speaker on such an occasion as this usually seeks to interest his audience by tracing the history of his Chair throughout the past centuries, and by giving some account of the life and work of the men who preceded him. Here we can hardly follow that historical method. The re-organized Faculty of Medicine in this university dates back only to 1887. In that year the duties of the Chair of Obstetrics were assumed by my immediate predecessor, Dr. Adam Wright. At that time the teaching of obstetrics must have been surrounded with great difficulties, for there did not exist the large obstetrical hospitals and maternity charities which were already well established in the older countries. That these difficulties were surmounted and obstetrical teaching brought to a high degree of efficiency will always remain to the credit of Dr. Wright.

The Chair of Gynæcology has had two occupants since 1887, the late Dr. Ogden and the late Dr. Ross. And now to-day obstetrics and gynæcology are united under one charge, not, however, for the first time, for Dr. J. A. Temple held the Professorship of Operative Obstetrics and Gynæcology for the six years between 1903 and 1909.

In Britain and in Europe the two subjects have always been closely linked. In Germany the *Frauenklinik* is a constant feature in every medical school, and in it obstetrics and gynæcology are taught under the direction of one head. On this continent the rapid progress of surgery has been responsible for the separation of the two subjects. While this has resulted in notable advances in certain directions, it is questionable whether it has been followed by the best results as far as teaching is concerned. In practice it has on the one hand tended to exaggerate the surgical aspect of gynæcology, often to the exclusion of non-operative and more conservative lines of treatment, and on the other it has deprived the obstetrician of opportunities of perfecting himself in operative technique, and to-day surgical intervention is more and more

resorted to in obstetrics, as being in many instances the safest and most conservative line to adopt in the interests of mother and child.

Gynæcology, in its early days, did much for surgery. The gynæcologist was the first to demonstrate the possibilities of abdominal surgery, and to-day the glamour of the brilliant results achieved by him is apt to fascinate the student, and to throw into the background the more important, though less spectacular, work of the obstetrician. By combining the teaching of the two subjects a better appreciation of their interdependence and of their relative importance can be given.

Gynæcology is a thing of recent growth, but obstetrics goes back to the time of primitive man. To some of the phases in the growth and evolution of obstetric art I should like to direct your attention, not alone because of their historical interest, but also because of the lessons they can teach us to-day.

Long before the phenomena of disease were recognized those of parturition must have appealed to the primitive mind. Later on, as with other branches of medicine, there gathered round obstetrics the superstitions and strange beliefs of primitive religions. "The death of the mother or child at birth was regarded, not as the result of a diseased or abnormal state of the body, but as the curse of a god, whose favour must be secured ere the danger could be averted. The priest who prescribed the mode of atonement played the part of the physician, and thus in a sense our art took its origin within the pale of the Church" (Milne Murray). In Egypt, as early as 3,000 B.C., such a class of priest-physician existed.

It is not until the time of Hippocrates, however, 400 B.C., that any definite writings on the subject are found, and such writings embody the teaching, beliefs and superstitions of the previous two thousand years. Hippocrates knew little of human anatomy, having only dissected animals, and for that reason his teaching was often inaccurate, and in the light of later knowledge sometimes grotesque. The imagination was given full play, and we find such beliefs as that "the uterus was double, and like a double-barrelled gun discharged male foetuses from the right, females from the left barrel: that the foetus sat placidly on the brim of the pelvis, and then took a header into the new element of the outer world: that its time of waiting was spent, amongst other things, in learning the art of sucking, for how otherwise could it do so intelligently from the first?" (Barbour)

It was not until the study of human anatomy was begun,

about the beginning of the Christian era, that any material advance in the science and art of obstetrics was made. The part played by anatomy in the advance of medical knowledge has always been of the first importance, and in no department can this be more clearly demonstrated than in that of obstetrics. Soranus, who probably lived towards the end of the first century,* was the first to give a description of the pelvic organs. That description is wonderfully accurate, and he not only deals with the normal, but also made observations on the alterations produced by disease. He was followed later by Galen (born 130 A.D.) but his account is not so exact, so that it is doubtful if he had ever actually dissected the pelvis. Much of the teaching of Soranus was later incorporated in the work of Moschion, who probably lived in the fourth century, and his writings must have done much to put obstetrics on a surer basis at that time. The work of those men was lost in the darkness of the succeeding centuries, and, until the beginning of the sixteenth, obstetric art was again at a standstill. Its practice passed into the hands of ignorant women, who revived and perpetuated the old beliefs and superstitions. From the sixteenth century onwards there was a succession of great men, each of whom, in addition to other work, contributed greatly to the knowledge of pelvic anatomy. Vesalius, who gave the first description of the bony pelvis, Eustachius and Fallopius, who noted and figured more accurately than any of their predecessors certain of the pelvic structures, are names with which you will all become familiar. They were contemporaries, and each, working independently, contributed much to anatomical knowledge.

These advances induced the men who practised medicine, and more especially surgery, to direct their attention to obstetrics, and so we find Ambroise Paré, the great French surgeon, introducing, or rather rediscovering, the operation of turning in 1550. The practice of the art was still in the hands of untrained women, the surgeon being called in only in cases of special difficulty. In the seventeenth and eighteenth centuries further anatomical advances were made by Albinus, Heller, Roederer and Smellie, and by William Hunter, who in 1774 published his atlas, containing a complete description of the gravid uterus. Through their researches, and those of the men who preceded them, the invention of the obstetric forceps was made possible, and the mechanism of parturition was explained. With the invention of the obstetric forceps in the seventeenth century the practice of obstetrics began to pass

* Some authorities place him in the third century.

out of the hands of women. Men like Smellie and Hunter in England, Levret and Baudelocque in France, Roederer in Germany, contributed in no small measure to the elimination of the fallacious teaching of the previous centuries, and to the establishment of a line of treatment founded upon scientific facts. They laid the foundation of obstetric practice as we know it to-day, and all that they did was the direct outcome of anatomical investigation. In more recent years research has still continued, and men like Barbour, Braune, Waldeyer, Schroeder and others have done much to elucidate the mechanism of parturition by their work in sectional anatomy.

At the beginning of the nineteenth century a fairly complete knowledge of anatomy served as a sound working knowledge for the obstetrician. The phenomena of normal parturition were known, and the management of abnormal cases was conducted on definite scientific lines. The obstetric forceps were in general use, and other operative procedures could be carried out. These latter, however, were restricted by reason of the suffering they entailed. It remained for the genius of Sir James Y. Simpson to put into the hands of his fellow practitioners the means by which they might soothe to sleep the parturient patient, and so carry out painlessly the most lengthy of these procedures.

As with so many of the other great discoveries in medicine, that of anæsthesia cannot be credited to any one single man. William Thomas Green Morton, a dentist, was the first to demonstrate the feasibility of inducing general anæsthesia by the inhalation of sulphuric ether. In the Massachusetts General Hospital, Boston, on October 16th, 1846, he successfully anæsthetized a patient on whom one of the surgeons operated. Two years previously Horace Wells had rediscovered the anæsthetic properties of nitrous oxide gas, which had been known to Humphrey Davy in 1800. Following the success of Morton, British surgeons, among them Liston, began the use of ether. Reports of their success soon attracted the attention of James Young Simpson, at that time Professor of Midwifery in the University of Edinburgh. He had always been interested in the subject of anæsthesia, and immediately began to enquire into the possibility of using this new anæsthetic during parturition. The problem before him was harder than that which faced the surgeon. In those days the surgeon did his work quickly, so that the patient did not require to be long under the influence of the anæsthetic. The problem presented to Simpson was two-fold. Could the anæsthesia be continued sufficiently long to give appreciable relief? And would the anæsthetic interfere

with uterine contraction? He chose for the first trial a case of contracted pelvis, calling for the operation of turning. He waited for this case because, from the nature of the operation, any interference with uterine contraction by the anæsthetic would be of little moment. On January 19th, 1847, the operation was successfully and painlessly performed under ether anæsthesia, and Simpson was able to satisfy himself that uterine contraction went on normally. He therefore at once proceeded to employ it in normal cases, an account of which he read before the Edinburgh Obstetrical Society on February 10th. The practice was soon taken up in France, in England, in Germany, and a few months later in America.

But Simpson did more than this for anæsthesia, for it was he who first demonstrated the anæsthetic properties of chloroform. Not being altogether satisfied with ether, because of the large quantities required in prolonged cases, and because of the bronchial irritation to which it often gave rise, he had sent him by different chemists various volatile substances which might be inhaled. With these he experimented on himself and on his friends. Amongst these substances was a small quantity of chloroform, which he had procured from Messrs. Duncan and Flockhart. Mr. Waldie, a Scotchman in business as a chemist in Liverpool, had suggested to him that this was probably the anæsthetic substance in the chloric ether which Bigelow in Boston, and Jacob Bell in London, had used successfully. Here is the story of the discovery, as it is graphically told by Professor Miller, a near neighbour of Sir James Simpson in Queen Street, Edinburgh, and quoted by his nephew and successor in the Chair, Sir A. R. Simpson.

"Most of these experiments were performed after the long day's toil was over—at late night or early morn—and when the greater part of mankind were soundly anæsthetized in the arms of common sleep. Late one evening—it was November 4th, 1847—on returning home after a weary day's labour, Dr. Simpson, with his two friends and assistants, Drs. Keith and J. M. Duncan, sat down to their somewhat hazardous work in Dr. Simpson's dining-room. Having inhaled several substances, but without much effect, it occurred to Dr. Simpson to try a ponderous material, which he had formerly set aside on a lumber-table, and which, on account of its great weight, he had hitherto regarded as of no likelihood whatever. That happened to be a small bottle of chloroform. It was searched for, and recovered from beneath a heap of waste paper. And, with each tumbler newly charged, the inhalers resumed their vocation. Immediately an unwonted hilarity seized the party; they became bright-eyed, very happy, and very loquacious—ex-

patiating on the delicious aroma of the new fluid. The conversation was of unusual intelligence, and quite charmed the listeners—some ladies of the family and a naval officer, brother-in-law of Dr. Simpson. But suddenly there was a talk of sounds being heard like those of a cotton mill, louder and louder: a moment more, then all was quiet, and then—a crash. On awakening, Dr. Simpson's first perception was mental: 'This is far stronger and better than ether,' said he to himself. His second was, to note that he was prostrate on the floor, and that among the friends about him there was both confusion and alarm. Hearing a noise, he turned round and saw Dr. Duncan beneath a chair—his jaw dropped, his eyes staring, his head bent half under him; quite unconscious, and snoring in a most determined and alarming manner. More noise still, and much motion. And then his eyes overtook Dr. Keith's feet and legs, making valorous efforts to overturn the supper-table, or more probably to annihilate everything that was on it: I say, more probably, for frequent repetitions of inhalation have confirmed, in the case of my esteemed friend, a character for maniacal and unrestrainable destructiveness, always under chloroform, in the transition stage. By and by, Dr. Simpson having regained his seat, Dr. Duncan having finished his uncomfortable and unrefreshing slumber, and Dr. Keith having come to an arrangement with the table and its contents, the *sederunt* was resumed. Each expressed himself delighted with the new agent, and its inhalation was repeated many times that night—one of the ladies gallantly taking her place and turn at the table—until the supply of chloroform was fairly exhausted."

Whatever may be the difference of opinion as to the claims for priority in the discovery of anæsthesia and the different anæsthetics, there can be no question that to Simpson belongs the credit of first using it for the relief of suffering women. The story of the bitter opposition to its use in obstetrics, coming from his own profession and from the Church, is known to many of you. Fortunate it was for future generations that Simpson was a man of such strong convictions, such iron will, and so skilled in debate as to beat down that opposition. For "on the man who first dared to apply it for the relief of the pain of labour fell the task of enlightening ignorance, of disarming prejudice, of dispelling superstition, and of vindicating for surgeons and for accoucheurs the right to give, and for sufferers to claim, the ease that anæsthesia is calculated to afford" (A. R. Simpson).

With obstetric science making rapid progress, and with the great boon of anæsthesia added, the practice of the art was still

attended with a frightful mortality from puerperal fever, especially in the large maternity hospitals. From time to time severe epidemics broke out, devastating the wards like a veritable plague.

In the same year as Simpson's discovery of chloroform Semmelweiss, a young obstetrician in Vienna, published a long and elaborate investigation into the causes of this fever. His work extended over several years, and was characterized by the most painstaking scientific accuracy. He began by noting that, while the mortality was 2·7 per cent. in the wards of the hospital where nurses only were in attendance, it was as high as 11·4 per cent. in those to which doctors and students were attached. He further noted that the mortality among patients treated in their own homes was much lower than that among hospital patients. He then found that the appearances in a subject dying from septicæmia, as the result of an autopsy wound, were exactly the same as those present in women dying from puerperal fever. He at once came to the conclusion that puerperal fever was due to the introduction of cadaveric material into puerperal wounds, and that the preponderance of cases among patients attended by students and doctors was due to their attendance at autopsies. Acting on this theory he insisted on careful washing of the hands and the use of a solution of chloride of lime. As a result the mortality was at once reduced to 1·27 per cent.—lower than it had ever been in any part of the hospital.

Before Semmelweiss, Oliver Wendell Holmes, in 1843, published a paper, in which, from a long series of observations, he stated his conclusions that puerperal fever was of the nature of a contagion; that it was conveyed by the hands of nurses and doctors, and that it was a preventable malady. Even before him others in Britain and on the continent of Europe had come to much the same conclusions. In 1869 Sir James Simpson wrote a paper pointing out the same facts which Semmelweiss had noted with regard to the mortality among hospital patients. In one of his lectures he demonstrated the identity in the clinical course and autopsy findings of surgical and puerperal fever, and ascribed both to contagion carried by the hands or person of the operator.

The work of these men received but scant attention until, in 1871, Lister, profiting by the researches of Pasteur and others, gave to the world the principles of antiseptic surgery. After much controversy and bitter opposition these principles were accepted by the profession, and were applied to the practice of obstetrics with the most beneficent results so that with the perfection of technique and the later introduction of the aseptic method the

mortality from puerperal sepsis in maternity hospitals has been reduced almost to vanishing point.

Unfortunately the same good results have not been achieved in private practice. In most countries the mortality from puerperal sepsis still ranges between 1 and 3 per thousand. In Ontario, for the year 1911, it was 2.29 per thousand, and in the principal cities of the province it was as high as 2.4 per thousand.

While recent bacteriological research has shown that the organisms of puerperal sepsis may gain access without the intervention of the doctor, it is yet true that, in the vast majority of instances, the responsibility rests with him or with the others in attendance. The conclusion therefore must be that the Listerian principles are not followed with the same careful attention in private practice as in hospitals. Other causes may be at work as well, but they must be of minor importance. There can scarcely be any question that, if the principles of antiseptic and aseptic surgery were applied as rigidly in private obstetrical as in hospital obstetrical practice, the mortality from puerperal sepsis would practically disappear. The practitioner is too often lulled to a sense of security by the observation of some form of antiseptic technique, and does not pay the attention to detail which he would consider an absolute necessity were he to undertake a surgical operation. It is only by such a rigid observance of detail that this mortality can be reduced. A great responsibility attaches to us as teachers, and to you as students and future practitioners, in this matter.

In the obstetrical hospital you see aseptic teaching carried out in the minutest detail, but this is not enough. You must know how these methods can be applied in the patient's own home. It must be demonstrated to you that, as it is possible to perform a surgical operation with as much hope of success, so far as the aseptic healing of the wound is concerned, in a private home as in a hospital, so is it possible to reduce the incidence of puerperal sepsis in private practice to what it now is in our great institutions. This can best be accomplished through a most carefully conducted out-patient department, such as we hope will soon be established here.

Since the time of Lister's discovery the line of advance in obstetrics has run parallel with that of the allied branches of surgery and medicine. Technique has been so perfected as to render the performance of even the most severe operation almost devoid of risk to life. The whole field of operative gynaecology has developed. The bacteriologist has demonstrated the nature of the infecting organisms in puerperal fever, and has devised a means of treating

it. The organismal nature of a certain general disease, hitherto only surmised, has been demonstrated. The serologist has found a method whereby it can be recognized even in its most obscure forms, whilst the chemist and the experimental pharmacologist have supplied a drug for combating its ravages. The pathologist has demonstrated the nature of the lesions present in the toxæmias of pregnancy, and the bio-chemist and the pathological chemist are endeavouring to explain their causation. The physicist and chemist have given us the *x*-rays and radium, both most valuable therapeutic agents, the full possibilities of which are only beginning to be understood. These are the lines along which modern medicine is travelling to-day.

Yet there are those who hold that in the medical curriculum altogether too much time is devoted to the sciences, and to the laboratory side of your training; that the time given to them is wasted, and might more profitably be devoted to clinical work. You have all heard or will hear such opinions expressed. And just at first you may be inclined to agree with them, for it is a disappointment to find that you must spend a full two years in the study of chemistry, physics, biology, anatomy and physiology, and that it is not until the beginning of your third session that you visit the hospital wards, and enter upon what may be termed the human side of your training. This feeling of disappointment is quickly dispelled when you become acquainted with the phases and stages in the development of the science and art of medicine, some of which I have endeavoured to put before you to-day. The whole progress of medicine has always been dependent upon progress and discovery, in those other realms of science. Men, devoting their lives to them, have ever been the pioneers, breaking into new ground, clearing away false beliefs, and devising new methods of investigation. The practical physician, imbued with some of their scientific spirit, has culled here and there the fruits of their labours, making use of their discoveries, and applying their methods for the elucidation of the practical problems of health and disease. In this way has been built up the science and art of medicine as we know it to-day. And how can we hope to understand and appreciate the finished product if we know nothing of the component parts?

The one constant characteristic of all those great men who have done so much for our science is their power of accurate observation and logical deduction. These are faculties which are of the first importance to every one of you, and which it is one of the chief purposes of the medical curriculum to develop in you. This habit

of accurate observation is one which it is not easy to acquire. Listen to what Sir James Paget, himself one of the keenest and most accurate of observers, says regarding it: "By accurate observation we must mean not the mere exercise of the senses, not the mere seeing, or hearing, or touching of a thing, with some levity of thinking about it; we must not mean even the keenest use of the eye cultivated in microscopic work, or of the ear hearing sounds that to the uneducated sense would be inaudible, or the use of the finger with the most refined detective touch. All these higher powers of the sense you must acquire by careful study and practice, and you must learn to exercise them all with all the attention with which a strong will can direct and watch them: but even all this, difficult as it is, is only a part of scientific observation. This must include, besides, an habitual constant watchfulness, the taking notice of all the conditions in which objects or events are found; their concurrence, their sequences, their seeming mutual relations, all their variations. To do this, and to do it again and again, and with constant care, whether it be in things occurring naturally or in experiments—to do this accurately and always is really very difficult. A few seem to have the power naturally; there are some born naturalists, some born physicists; you have had some here; but in nearly all men, and—you may safely believe—in yourselves, the power to observe accurately needs careful self-training, self-suspicion, and self-discipline."

If you enter upon your preliminary studies regarding the work as a necessary drudgery which must be gone through in order to satisfy your examiners at the end of the term, the time will indeed to a great extent have been wasted. You may learn from lecture-notes and from text-books so many facts and a great number of new names, but in the end you will be in very much the same position as when you began, for knowledge so acquired soon slips the memory, and in a few months is as if it had not been. If, however, you are determined to acquire through those studies some of this faculty of close and accurate observation you will find that your interest in them becomes quickened and intensified, that you have no longer to tax your memory with a series of isolated and uninteresting facts. The phenomena which you have yourself observed, the experiments which you have yourself performed, become part of you. You cannot forget them if you will, and round them all the other facts group and arrange themselves in orderly and logical sequence. You are no longer dependent on memory alone: you have begun to observe and think

But in acquiring this habit you must not be conscious of doing

so, for this "self-training, self-suspicion and self-discipline" consists in absolute concentration on the work which you are doing at the moment, the cultivation of a desire for knowledge for the sake of knowledge alone, and the putting behind you of all desire to generalize or theorize without a thorough sifting of the facts. You must not constantly be looking for the practical application of the knowledge you acquire. Be content to acquire it, resting assured that the practical application will come in some form later. To neglect any opportunity of becoming acquainted with the more scientific side of your profession is to place yourselves in the position of those short-sighted men who, in the time of Soranus, failed to see the necessity for the study of anatomy, and to whom the latter thought it necessary to make the following sarcastic apology: "But since we are about to pass to the description of what occurs in health, we must first explain the structure of the organs, which in part can be studied directly, in part by anatomy. And, although it is of no use, nevertheless, since it is held to be a part of enlightened education, we shall teach what is known of it, for we shall be more readily believed when we say that anatomy is useless if we have first shown ourselves to be acquainted with it, nor shall we provoke the suspicion that, to cover our ignorance, we have depreciated one of those subjects which are deemed useful" (translation by Barbour).

For "anatomy" substitute—or rather to "anatomy" add—chemistry, physics, physiology, bio-chemistry, pathology, bacteriology: these occupy to-day the place that anatomy did in those far distant times. Through them our methods of diagnosis and treatment are being revolutionized. The efficiency of the modern hospital is now gauged, not alone by the number of beds it contains, by the brightness and airiness of its wards, or by the sumptuousness of its furnishings, all-important as these are. Its true efficiency as a school for the training of the future practitioner, as a centre for research, and above all as an institution for the healing of the sick, is measured by the number and the completeness of equipment of its laboratories, and by the skill of the men who direct them. In like manner the real practical physician of to-day is the man who has at his command a knowledge of, and the ability to apply, every aid which science can afford him.

In this university, with its great modern hospital, you have opportunities for qualifying yourselves in these directions, such as none of your predecessors had, and few of your contemporaries in other schools enjoy. We look to you with confidence to take the fullest advantage of them.

HÆMORRHAGIC DISEASES

BY J. W. McINTOSH, M.D.

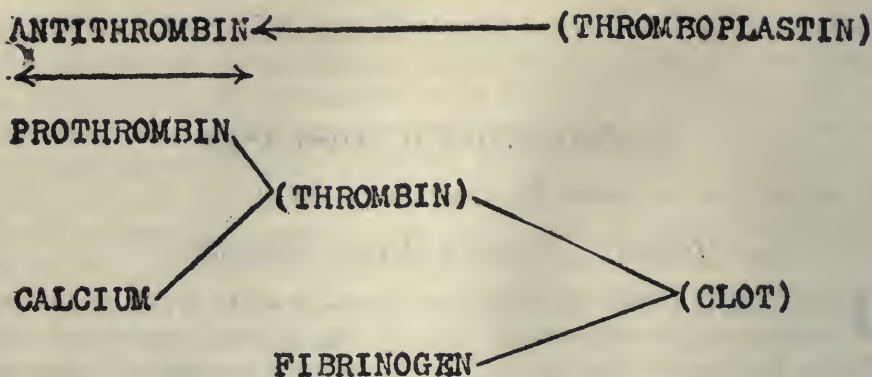
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HÆMORRHAGIC diseases or diseases with a tendency to hæmorrhage have been usually classed mostly under the disease purpura. Purpura has recently been considered more as a symptom in a great variety of conditions, and yet investigators find, more or less constantly, alterations in the blood in the various purpuras, and are demanding a search for a cause primary and secondary, which is proving successful in competent hands in an increasing number and variety of cases

Futcher¹ adopts the following classification: purpura rheumatica (Schönlein's disease); purpura arthritica; Henoch's purpura; purpura in infectious diseases; cachectic purpura (scurvy, Bright's, tuberculosis, cancer, arteriosclerosis, etc.); toxic purpura from drug administration, e.g., KI. Hg, KCLO₃; toxic purpura from snake bite, etc.; hæmophilia, familial and sporadic; purpura hæmorrhagica; hæmorrhagic diseases of the new-born, as melæna neonatorum, etc.

We have here a conglomeration of diseases with the common feature of a hæmorrhagic tendency. Such a view of hæmorrhagic diseases is necessarily very crude.

Another classification might be attempted by taking into consideration an increase or decrease of one or more of the various constituents known to take part in the process of clotting. Whipple² and others are endeavouring to trace the cause and source of the over- and under-production or destruction of these various constituents. This is such a big subject that it is my intention to speak only of some of the more recent work, and I have appended hereto a list of some twenty contributions published mostly in the last twelve months. The best theory evolved of coagulation is principally due to Morawitz, to Field, to Mallenby, and finally to Howell. Howell³ disproves the thrombokinase theory of Morawitz and claims that such a hypothetical substance has no existence. His picture of the process⁴ is the best and answers all known conditions. It might be represented thus:



The clot is formed by the union of fibrinogen and thrombin. The former is normally present in the blood, the latter is not, but is formed under certain conditions, though it does not remain, as clot is immediately produced on its appearance.

Thrombin in turn is formed by the union of ionized calcium atoms and prothrombin, both of which are normally present in the blood. Why then is thrombin not found under normal conditions? It is because of the presence normally in the blood of a substance called antithrombin. Antithrombin and prothrombin bind one another, and normally a delicate balance is maintained between them, so that the prothrombin is not free to unite with calcium forming thrombin, which in turn coagulates the fibrinogen giving normal clot. It follows then that if the amount of antithrombin in the blood falls low, or if the quantity of prothrombin increases proportionately to the antithrombin, the prothrombin is set free, and a tendency to spontaneous thrombosis may and does occur, as in cases reported by Thayer⁵ and Howell,³ provided the other constituents are normal in quantity and quality, and circulatory conditions are favourable.

If, on the other hand, antithrombin accumulates in excess, or prothrombin falls below normal or disappears altogether, there will be a tendency to hæmorrhage, the normal clotting properties of the blood being impaired, and bleeding is to be expected. Most of the cases of hæmorrhagic diseases may be grouped about this point. The mystery surrounding the production of prothrombin, and the cause of its occasional disappearance have not yet been solved, but something has been done as regards antithrombin of which I shall speak later. On occasion, another substance is produced which neutralizes the antithrombin. Prothrombin is thus released to combine with calcium forming thrombin. This substance is called by Howell and others thromboplastin. Throm-

boplastin is set free by cell injury variously to blood cells, platelets, tissue cells, etc. In testing blood, therefore, for the presence or excess of antithrombin, this must be taken into consideration and blood taken direct from the circulation, for if it escape through other tissue, a certain amount of thromboplastin would be taken up, which, neutralizing the antithrombin, would give a greater tendency to clot formation than the blood itself possessed, and thus deceive one as to the amount of antithrombin present. This fact is utilized in testing the blood for antithrombin, for if prolonged contact with the tissues does not cause clotting, the inference is that there is an absence or low percentage of prothrombin, because the tissue thromboplastin will neutralize the antithrombin and free the prothrombin for clotting purposes.

It will be seen, therefore, that spontaneous thromboses and hæmorrhagic diatheses should be considered together clinically.

Duke⁶ claims that the platelet count is reduced in purpura hæmorrhagica always, indeed that the low platelet count is the cause of the tendency to hæmorrhage. He is strengthened in this opinion because, in anæmia experimentally produced by the injection of diphtheria toxin, benzol and tuberculin in animals, the platelet count fell to near zero. He determined that when the count fell from the normal of 200,000 to 400,000 per c.mm. to about 50,000, there was a tendency to minor hæmorrhages (petechiæ, etc.) and that hæmorrhagic disease appeared when it fell below 10,000 or 1,000.

Ludwig Aschoff⁷ has shown what a complicated process thrombosis is, and claims that the red clot does not form until the vessel concerned is blocked by a platelet clot, which in turn is only formed under the combined factors of delayed circulation and altered blood constituents, with or without injury to the endothelium.

Whipple² claims that the platelets can only act mechanically and that Duke's cases must have had an excess of antithrombin in addition to the low platelet count, a factor not estimated by Duke.

Howell,³ on the other hand, found the antithrombin and prothrombin factors normal in the cases he studied of purpura hæmorrhagica, and in his summary concludes that the prothrombin is furnished by the blood platelets. He considers it reasonable to assume that a deficiency in prothrombin may be due to some functional change in the platelets.

Carpenter and Gittings⁸ come to the conclusion from their experiments, that it is improbable that any important variation exists in the mere time of coagulation of the blood in diseases other than

SUBSTANCE	TENDENCY TO	EXAMPLES	TREATMENT
I.			
+Fibrinogen.	Clotting.	Experimental or therapeutic use of defibrinated blood (Barrett).	Intravenous injection of peptone.
+Fibrinogen.	Hæmorrhage.	Due to fibrinolysis or clot digestion.	Intravenous saline to aid elimination of toxine.
—Fibrinogen.	Hæmorrhage.	Chloroform and phosphorus poisoning. Intravenous injection of peptone. Cirrhosis of the liver.	Injection of defibrinated blood.
II.			
+Calcium. —Calcium.	Clotting. Hæmorrhage.	?After great calcium intake? Slight, as in jaundice and other factors.	Citric acid. Calcium salts.
III.			
+Prothrombin.	Thrombosis.	?Pathological increase of platelets.	Benzol, tuberculin.
—Prothrombin.	Hæmorrhage.	Hæmorrhagic diseases of new-born (Whipple). Hæmophilia—familial and sporadic (Howell). ?Liver necrosis (Whipple).	Serums (fresh). Whole blood injection or transfusion. Prothrombin administration. ?P.D. and Co.'s Coagulose.
IV.			
+Antithrombin.	Hæmorrhage.	Purpura of many varieties (Whipple), including typhoid, miliary t.b.c., septicæmia, endocarditis, aplastic anæmia, acute leucæmia (Whipple) and pneumonia (Dochez).	Prothrombin (? Coagulose). Thromboplastin—Fresh spleen extract; hæmolyzed blood cells; living tissue. Direct transfusion.
—Antithrombin.	Thrombosis.	Spontaneous thrombosis, generalized or local (Howell and Thayer).	Stimulate production of antithrombin by injection of thrombin or peptone. Use of leech (antithrombin). Isolated antithrombin. Fresh tissue extract. Fresh hæmolyzed blood cells. Fresh spleen extract.
V.			
+Thromboplastin.	Thrombosis.	? Extensive tissue injuries especially if antithrombin is low.	
—Thromboplastin.	Hæmorrhage.	Possibly in cachectic conditions. Long continued excess of antithrombin exhausting the thromboplastin supply in the tissues (Whipple).	

those of the so-called hæmorrhagic type. Of much more importance is the firmness and texture of the clot.

In the accompanying table a classification, and therapeutic measures for influencing the tendency to clotting or bleeding, are suggested. Briefly, from recent contributions, some of the factors mentioned in the table may be considered in the varying forms of hæmorrhagic tendencies.

FIBRINOGEN belongs to the globulin group. According to Goodpasture⁹ several organs of the body are concerned in its production, the liver being one. The hæmorrhagic disease, or tendency, produced in chloroform and phosphorus poisoning has been shown as due to a deficiency of fibrinogen, the clot formed lacking firmness and contractility, with the result of the bleeding time being prolonged to hours, and yet the clotting time normal. The treatment for hæmorrhage after operations in which chloroform is used would therefore suggest supplying the fibrin-forming elements. The intravenous injection of peptone also reduces the fibrinogen, the capillaries of the gums if then injured will cause bleeding, and be all right again in a few hours. In cirrhosis of the liver the fibrinogen is low and favours bleeding from gastric abrasions. Fibrin autolysis or clot digestion was the cause of death in two cases of Whipple's.

CALCIUM. Only the ionized calcium molecules take part in clotting. Addis,¹⁰ as a result of experiment, concludes that citric acid diminishes the amount of ionizable calcium and increases the amount of the non-dissociable form; calcium has the reverse action but the amount of variation in the calcium content is not sufficient to affect the coagulation time

Austin and Pepper¹¹ have shown that if a solution of bile is allowed to act ten minutes on a calcium solution before the resulting mixture is added to a plasma containing the other constituents necessary for clotting, there is a distinct delay of complete coagulation, and such clot as is formed is poor and filmy. Whipple² amongst many cases of jaundice, found it and hæmorrhage associated in only one, and then only for a while before death. He concludes that it is very rare. In jaundice there may be a slight delay in the coagulation time, but on the addition of calcium it is quickly restored to normal. It is probably due to the bile pigments binding the calcium, a compound broken up with difficulty, and thus the calcium would be only slowly available for coagulation. Therefore he concludes that there is no danger in operating on jaundiced patients as far as hæmorrhage is concerned. The fear

of surgeons is ungrounded, except in rare cases associated with hæmorrhagic disease also, a condition which can be determined beforehand.

Calcium is more or less credited as a factor aiding or hindering clotting in the various forms of thrombosis or hæmorrhage, but in the cases studied scientifically I cannot recall one reported, where it has been the only factor. Most authorities (Nolf, Morawitz and Lossen) claim that the content of calcium in hæmophilic blood is normal, and that its addition does not accelerate the clotting process. Howell from his researches is uncertain, but thought there was a diminution of calcium in one case, and that the addition of calcium chloride accelerated somewhat the coagulation time of the blood.

PROTHROMBIN, of unknown chemical composition, exists in a condition of absorption in the fibrinogen group, according to Carpenter and Gittings. It has been determined by Whipple¹² that the essential factor in bleeding in the hæmorrhagic diseases of the new-born is an absence or greatly decreased amount of prothrombin in the blood. For a study of this condition see articles also by Schloss and Comisky,¹³ Taylor and Jones,¹⁴ Mercken,¹⁵ and a contribution by myself.¹⁶ Apart from these and hæmophilia, cases of absence of prothrombin are rare. Whipple,² from a study of a case of icterus, liver disease and bleeding with cancer of the pancreas, in which he found an excess of antithrombin and a decrease of prothrombin, considers there is a possibility that the liver is concerned in the production of prothrombin, the liver necrosis perhaps having caused the terminal reduction of prothrombin in the blood. It is so important to the organism that several organs may be concerned in its production.

In testing for the presence or absence of prothrombin, Whipple uses spleen extract, which contains plenty of thromboplastin, probably derived from blood cell destruction. This thromboplastin neutralizes the antithrombin and frees the prothrombin for clotting purposes. If no clotting results the conclusion is arrived at that prothrombin is absent or greatly reduced. If blood is left in contact with injured tissues for some hours the thromboplastin of the tissues neutralizes the antithrombin and clotting takes place, unless prothrombin is absent.

The cause of the absence, a few days after birth, of prothrombin from the blood of infants showing hæmorrhagic disease is unknown, though much speculation might be expended on it. The presence of syphilis or some form of bacterial infection as a cause, must not

be lost sight of with some damage thereby to the liver or other organs (Kilham and Mercealis, Ebstein, and two cases of my own reported¹⁶). The treatment of this condition by serum and blood variously administered is therefore well founded, supplying the prothrombin which is lacking.

HÆMOPHILIA according to some authorities is divided into two varieties, one familial and hereditary which has an excess of antithrombin, and the other sporadic, less severe, which has an absence or great diminution of prothrombin. Howell in his study of cases of hæmophilia (two hereditary and one sporadic) finds an upsetting of the balance between antithrombin and prothrombin, with a normal amount or slight excess of antithrombin, but with a pronounced diminution of prothrombin, a negative ratio compared with that of the normal blood, which has a positive prothrombin ratio. There is therefore always a relative excess of antithrombin, which is quite sufficient to account for the prolonged period of coagulation. By exposure of the blood to damaged tissue, the thromboplastin neutralizes the antithrombin and thus accelerates clotting. The same action may be secured by adding thromboplastin to the blood—he used a brain extract called kephalin. Howell's conclusion is that hæmophilia may be defined as a condition limited to the male, in which the coagulation time of the blood is markedly prolonged in consequence of a deficiency in the amount of the contained prothrombin, with the additional characteristic that the effect is transmissible by heredity in accordance with the so-called law of Nasse. Howell has been able to isolate prothrombin from the blood. The condition of the blood in hæmophilia therefore is not unlike that of hæmorrhagic disease of the new-born, and one would expect similar treatment to be efficacious. Howell gave hæmic serum with improvement, yet the ultimate hæmophilic condition of the blood was not changed. Cumming of this city treated a bleeder of many years standing, who had resisted all other forms of treatment, by Schloss and Comisky's whole blood method, with immediate arrest of the hæmorrhage and, I believe, no recurrence since.

ANTITHROMBIN has been determined as the cause of hæmorrhage of most of the varieties of purpura studied by Whipple. Howell's findings of normal quantities of antithrombin and prothrombin in purpura, with normal coagulation time, leaves the tendency to bleeding unexplained. His work throws no light on the point brought up by Duke, that while the clotting time is normal, the bleeding time is greatly prolonged, as tested by pressing against

a small puncture a bit of filter paper at different intervals of time. This Duke explains by a diminution in the number of platelets, in consequence of which platelet thrombi fail to form in the wounded vessels.

The methods of determining the presence and quantity of antithrombin are, briefly, the reception of blood in oxalated plasma (1 per cent.), heating to 60°C. which precipitates the fibrinogen and destroys the thrombin and prothrombin, the antithrombin alone remaining. Excess of antithrombin is neutralized by more or less prolonged contact with the tissues, and clotting results when the other factors are normal. Mixing blood containing excess of antithrombin (slow clotting time) with extract of spleen, which contains much thromboplastin, neutralizes the antithrombin and secures rapid clotting. It is probably a counterpart of the antithrombin isolated in nearly pure form from the salivary gland of the leech—a soluble protein resembling the peptones and proteoses. This suggests to me a further possible use of the leech in cases with absence of antithrombin

There is some evidence that antithrombin is produced in the liver. For instance, if peptone or thrombin is injected into the circulation in experimental animals, the amount of antithrombin is increased, except when the liver is cut off from the circulation. Whipple has evidence that antithrombin is being constantly formed as it is used up, and is furnished in great part by the liver. In a badly damaged liver an excess of antithrombin seems to be formed and passed into the circulation.

Whipple has found an excess of antithrombin in liver disease with bleeding, in a case of typhoid with liver disease and bleeding, and in miliary tuberculosis with liver damage and epistaxis, seemingly where there is much cell necrosis and tissue destruction. Perhaps the split products from dead protoplasm are absorbed, carried to the liver, and stimulate the overproduction of antithrombin. He had a case of hæmorrhage in the new-born, showing excess of antithrombin in the blood. In this case there was generalized thrombosis—the baby had had abscess. The extensive thrombin formation would give rise to increased antithrombin production and thus tend to hæmorrhage. The antithrombin is probably protective against further thrombosis.

Gresnet in 1904 claimed to have experimentally produced purpura in animals by securing:—(1) hepatic derangement, (2) nervous disturbance, (3) presence of toxine.

Flexner claims that hæmorrhagin of snake venom acts as a

poison causing a primary change in the endothelium of the capillaries. It would seem that there must likewise be some alteration in the blood such as an overproduction of antithrombin.

Osler, in the *Lancet* of May, 1909, reports a case of universal purpura hæmorrhagica, where a part of skin blistered by mustard did not have any hæmorrhages. He argued that the mustard may have altered the blood capillaries so as to prevent hæmorrhage. A more plausible explanation might be that the mustard may have damaged the tissue cells locally, causing a production of much thromboplastin, which would neutralize the excess of antithrombin in the purpura, carried by the circulating blood all over the body, and thus locally prevent hæmorrhages.

THROMBOSIS. Howell³ in his study of four cases of spontaneous thrombosis found a very considerable diminution in the amount of antithrombin present, and in one case apparently a total absence, compared with the normal controls. This he estimated by the time it takes for a specimen to clot under addition of varying amounts of thrombin solution, other conditions being similar. The clotting time is greatly accelerated, therefore a diminished amount of antithrombin is present. Dr. Howell by experiment ascertained that the amounts of thrombin and calcium present were normal. He suggests treating these cases with isolated antithrombin or thrombin.

If the antithrombin is below normal, then the tendency to vascular thrombosis prevails, and if a minor injury occurs to the intima a thrombus forms and grows rapidly. With thrombus formation much thrombin would enter the circulation, and stimulate the liver to overproduction of antithrombin, and thus tend to restore the normal balance. If the antithrombin excess persists for days there is a tendency to hæmorrhage.

Certain liver diseases, and peptone and thrombin injected into the blood, stimulate the liver to an overproduction of antithrombin. In this class is septicæmia (Whipple), pneumonia (Dochez), endocarditis, miliary tuberculosis (Case 3, Whipple), and generalized vascular thrombosis, etc. (Case 4, Whipple). Diseases of the blood-forming organs, as aplastic anæmia (Case 5), and leucæmia (Case 6) may tend to hæmorrhage owing to the excess of antithrombin in the blood, due to blood cell disintegration products stimulating overproduction of antithrombin in the liver. Purpura and allied conditions are more common in acute leucæmias and where there is much and rapid cell destruction.

Whipple pleads for the careful examination of the blood before

treatment of hæmorrhagic diseases is instituted, otherwise harm may result, e.g., the use of serum where there is an excess of antithrombin, as in purpura. Indirect transfusion has the same objection. Direct transfusion of the blood would be all right. It seems to me that if one could introduce thromboplastin, such as fresh healthy spleen extract, to neutralize the antithrombin excess, the results might be brilliant. The riddle may be solved when the means by which the system normally neutralizes the antithrombin is discovered.

As my experience in the treatment of pulmonary hæmorrhage with serum has tended to confirm the excellent results of Vaughan, Jr.,¹⁷ it would be instructive to test the blood of such patients to find what state the antithrombin-prothrombin balance is in.

THROMBOPLASTIN. According to Carpenter and Gittings, the chemistry of thromboplastin is unknown, but it is found in all the body tissues, especially those rich in nucleoproteids, and in the formed elements of the blood, but is not found free in the circulating blood. Howell⁴ claims that thromboplastin comes from the lecithin in the cells and is a special phosphatid present, e.g., in kephalin, an extract of brain tissue.

An excess of thromboplastin is neutralized just beyond the area of injury to the tissue, by the antithrombin, and thus the spread of clot is prevented. Austen and Pepper¹¹ have shown, first, that a solution of hæmolyzed blood cells is a readily prepared and active thromboplastic condition; secondly, that a delay in the coagulation time of oxalated plasmas occurs on heating or standing, due to the release or formation of antithrombin, which holds in check the prothrombin; thirdly, that the coagulation time of such plasmas is greatly hastened by the addition of thromboplastin solution. Whipple's² method of using spleen extract accomplishes the same results as the hæmolized blood cell solution. Long continued excess of antithrombin in the blood tends to deplete the tissues of thromboplastin and hence when wounded or injured, the tissues cannot neutralize the antithrombin excess, and bleeding results.

Barrett,¹⁸ taking a solution of hæmoglobin from the red cells of rabbit's blood, and injecting it in sufficient amount into the vein of the rabbit's ear, caused death by dyspnœa, collapse and convulsions, due to a substance derived from the stroma of red cells. The same result has been produced in man by the injection of defibrinated human blood intravenously, as also with recently defibrinated rabbit's blood or diphtheria serum injected into rabbits.

He concludes:—(1) That thrombin or thromboplastin injected intravenously into rabbits and man causes a separation of fibrin to take place in the circulating blood. (2) That this is due to the action of thrombin. (3) That clotting takes place in the right side of the heart if rapid, or in the smaller vessels or capillaries of the lungs, if separation is slow. (4) That death is due to the mechanical interference with the circulation. (5) That there is no evidence of additional toxic effect produced by the fluid injected.

Whipple² had a case of excess of antithrombin where the patient's spleen contained very little thromboplastin. He concluded that it was exhausted neutralizing the excess of antithrombin in the blood. When parenchyma cells are killed in the body there is an escape of much thromboplastic substance. This must be neutralized by the antithrombin or other agents to prevent rapid intra-vascular clotting. Liver necrosis in the case cited would free an excess of thromboplastic substance and necessitate its neutralization. In this case there was an excess of antithrombin in the blood, which disappeared during the time when the liver necrosis developed. The inference is that the antithrombin excess was removed or rendered inert by the thromboplastin which escaped from the necrotic liver cells.

The recent studies and findings of the men cited, will doubtless give a clue to many scientific workers, so that we may confidently look forward to a great increase in the contributions to this subject, which will in a year or so elucidate the whole field of these interesting and important cases.

Since this paper was written Dr. Gordon has called my attention to *essential hæmaturia*, excluding therefrom all varicose conditions. In the study of its etiology, urologists seem to have come to an *impasse*, finding in these cases what they consider as normal kidneys, and no lesion beyond. In serial microscopical sections of eleven cases at the Mayo clinic, while finding no evidence of nephritis, in all but one they found an increase of the interstitial connective tissue and cicatricial changes in the glomeruli. As such conditions are found in numerous other kidneys they dismiss them as the cause of hæmaturia. They may, however, to my mind, be thought of as a determining factor, though evidently another cause must be sought elsewhere. The most likely place is in the blood itself—some alteration in the blood constituents bringing about an increased tendency to hæmorrhage. Of such changes, the one most likely would be an abnormal increase of antithrombin present. This could be tested on presentation of a case. But

back of this, one would need to make a search, probably for a focus of infection, whence the circulation would carry substances to the liver, which would stimulate an overproduction of antithrombin. It is just possible that the same pathological condition causing such increase, might produce the otherwise negligible microscopical changes found in the kidney. It seems incredible that such drastic and often inefficient measures as nephrotomy and nephrectomy, should have to be resorted to, for the relief of such a condition. On this theory the finding that splitting the kidney relieves such a condition may be explained thus: Opening the kidney would release much thromboplastin, which would neutralize any excess of antithrombin in the blood and thus facilitate clotting, the hæmorrhage not recurring owing to relief of tension from splitting of kidney and capsule.

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THE PRESENT STATUS OF THE RÖENTGEN EXAMINATION IN THE DIAGNOSIS OF GASTRIC ULCER

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ON reviewing the literature of gastric ulcer, the little reference to the use of the Roentgen rays, as an aid to diagnosis, is noticeable. This may be due, however, to the comparatively recent date since the information afforded by the rays has been available. To-day, undoubtedly, it furnishes information of very great value, and is far more reliable than the chemical examination of the stomach contents.

In the use of the x -rays, we must not expect to find a short cut to diagnosis, but must always consider very carefully, the clinical history, and the examination of the stomach contents. The well-known clinical signs are: pain after eating, epigastric tenderness, vomiting and hæmatemesis, and when present are generally sufficient to establish the diagnosis. More frequently, the symptoms are less definite; chronic dyspepsia may be the only indication with perhaps occasional vomiting or regurgitation; but pain during the digestive period occurs in 90 per cent. of the cases. Again, the history may suggest gallstone or renal colic, appendicitis, or any other abdominal condition; on the other hand, the condition may exist for years without symptoms.

The examination of the stomach contents is valuable, but not diagnostic. Hyperacidity is common in gastric ulcer, occurring in from 30 per cent. to 40 per cent. of the cases. It is also common in the absence of ulcer. If present in ulcer, it tends to prevent healing, and favours persistency of the condition. Normal acidity occurs in over 50 per cent. of the cases; anacidity in under 10 per cent. Blood is common. Motor power may be normal, but retention is frequent. Lactic acid is present when there is stagnation and hypochlorhydria.

Gastric ulcer is usually single, but often multiple (20 per cent. to 50 per cent.). The lesion is essentially a necrosis, with very little

Read before the Roentgen Ray Section of the Canadian Medical Association, London, Ontario, June, 1913.

sign of inflammation. About 60 per cent. are situated in the pyloric region, 19 per cent. in the middle zone, and 21 per cent. in the cardiac region. Another classification shows 36 per cent. on the lesser curvature, 30 per cent. on the posterior wall, 12 per cent. at the pylorus, 9 per cent. on the anterior wall, 6 per cent. at the cardia, 4 per cent. at the fundus, and 3 per cent. on the greater curvature. These percentages vary with different authorities, but will serve to indicate the relative frequency with which ulcer is found in the different regions of the stomach.

Until 1901, the stomach was a *terra incognita* to the *x*-ray worker. In that year, Rieder by introducing his bismuth meal, made it possible to study the dynamic and static conditions of this organ. In 1907 Jolasse stated that he had seen a patch of bismuth on an ulcer in the stomach and in the same year, Hemmeter reported that he had seen bismuth in deep ulcers artificially produced in cats and rabbits. In 1908, Haudek working with a watery suspension of bismuth in post-mortem cases of peptic and carcinomatous ulceration, found that a small quantity of bismuth remained scattered over the stomach wall, but he was not able to differentiate an ulcerating from a non-ulcerating surface. He also excised portions of the mucosa and submucosa 1 cm. square, and introducing a 10 per cent. bismuth suspension, got negative results, contradicting the work of Jolasse and Hemmeter. Jolasse's observations have not been supported by the improvements in technique nor has Haudek ever been able to confirm it, with an experience of many thousand stomach examinations. One may frequently see specks and streaks of bismuth separated from the main body, due to pockets in the stomach wall resulting from cicatrization, but the observation of bismuth in a simple non-penetrating ulcer, must be extremely rare. It is to the work of recent years of Holzknecht and Haudek that we owe so much in interpreting the *x*-ray findings in gastric ulcer. So clearly has their work been put forward, and so rational are their interpretations, that it would seem almost impossible to miss the diagnosis. Unfortunately, it is not always possible to see as clearly as these masters, or to interpret as skillfully as they do, so that for the average worker there is still a margin of error, which ought to decrease as one's experience grows.

A visit to the *x*-ray department should be part of the routine in all cases of suspected gastric or duodenal ulcer, provided the condition of the patient will permit. In some cases the result will be disappointing, negative in spite of a clear history of ulcer;

in others it may crystalize the diagnosis, or confirm what the clinician already knows; whilst in others again the result may be almost brilliant, as in hour-glass stomach, or in penetrating ulcer. The majority of cases, however, do yield some information concerning the condition of the stomach, and point the diagnosis either for or against ulcer. The interpretations of the findings should not be dogmatic, but should be weighed with the evidence obtained from other sources, the clinical data, and the examination of the stomach contents. The ulcer itself cannot be seen, and the diagnosis is entirely a matter of inference. We may speak positively concerning the degree of activity of peristalsis, whether there is retention, the presence of adhesions, and the effects of cicatrization. The examination may also indicate the line of treatment to be pursued, whether medical or surgical; and especially if surgical, it may indicate, in advance of operation, which method will be most likely to give the best result. If the stomach is empty within eight hours to ten hours, probably medicinal treatment with dieting will suffice. If there is retention much beyond that period, penetrating ulcer, or definite hour-glass, mild measures will be useless, and surgical interference will in all probability be necessary.

The evidences afforded by the Röntgen ray examination are of two kinds, namely dynamic and static. The dynamic evidences are produced by a disturbance in the motive power of the stomach, and are generally indicative of a condition of irritation. The stomach is a muscular organ, extremely sensitive, and irritation results in muscular spasm. The spasm may be due to functional or to organic conditions originating within the stomach, or reflexly to conditions outside the stomach. Gastric ulcer is one of the most frequent causes of spasm. These spasmodic contractions may be found in any part of the stomach, but the most frequent site is at the junction of the upper and middle thirds, and may be sufficiently deep and persistent to be dignified by the name of hour-glass. If the spasm persist for a considerable length of time, in spite of vigorous rubbing of the abdomen, ulceration or cicatrization is the most likely cause of the spasm. Again, spasm of the cardiac orifice due to ulceration in the neighbourhood may, if constantly repeated, cause a dilatation of the œsophagus. Another very common site for spasm is at the pylorus, causing delay; retention of the contents beyond six hours being frequently seen. Although gastric ulcer is the most frequent cause of spasm, the diagnosis should not be made unless supported by other facts.

Another disturbance seen in gastric ulcer is increased peristalsis—increase in number, in frequency, or in depth. Although

this can be made out on the plate, the screen examination gives by far the better estimation of the condition. As peristalsis is a variable factor, being affected by mental impressions, food and the nature of the gastric juice, one should avoid any conclusions on this sign only. Increased peristalsis is frequently seen in hyperacidity without ulcer, and occasionally in ulcer peristalsis may be absent or deficient, even with marked pyloric obstruction.

A further sign is the appearance of antiperistalsis; that is the presence of waves travelling in a reverse direction, from the pylorus towards the cardia. These were first noted by Jonas, and when present are indicative of pyloric stenosis, due to either ulcer or carcinoma. They are rarely seen, and can be observed only when the waves are of a certain amplitude, but may sometimes be brought out by vigorous rubbing of the abdomen. The observation of a single wave in the opposite direction would be sufficient.

Another very important sign is the length of time which the stomach takes to empty itself. Normally the stomach should be free of the bismuth meal within three or four hours. In gastric ulcer, associated with spasm of the pylorus, the meal is retained for six to eight hours or longer. Retention from spasm must be distinguished from retention due to organic stenosis. In spasm of the pylorus, there is a narrow stream of bismuth representing the lumen of the pylorus, connecting the stomach with the duodenum. Normally this stream is exactly in the centre of the clear space which represents the sphincter; in pathological conditions of the pylorus, this may be irregular or displaced to one side. This clear stream of bismuth indicates that the pylorus is patent, and that a normal quantity of bismuth can leave the stomach. As the stomach is seen to be contracting frequently, the delay therefore is due to the pylorus opening less frequently, that is to spasm. With an empty stomach six hours after a bismuth meal, we assume the absence of pyloric stenosis, and of spasm due to ulcer. If there are any remains, they are usually crescentic with a level top. If the remains are considerable, it would indicate organic stenosis; if small, it is probably due to atony, or to spasm from ulcer. If displaced upwards and to the left, it would indicate a cicatrized ulcer higher up on the lesser curvature, dragging on the pylorus.

The presence of the above disturbances in the dynamic manifestations, combined with a painful pressure point falling within the stomach area during the screen examination, especially at the pyloric region or on the lesser curvature, and occurring in a stomach the contour of which is more or less normal, would indicate a florid

ulcer or irritable scar. On the other hand, the displacement of the pylorus due to adhesions or cicatrices, the presence of an irritable scar, hour-glass or penetrating ulcer, may set up dynamic disturbances in the absence of florid ulcer. Here we are not so likely to have the normal outline of the stomach, and will have other more positive indications of their presence.

The static evidences of gastric ulcer are seen more frequently in cases of long duration. The dynamic disturbances are commonly associated, and when present, may or may not indicate that the process is still active. There may be alteration in the size of the organ, generally an increase from dilatation or hypertrophy; diminution in size in ulcer is rare. A low position is frequent from pyloroptosis, the pylorus dropping downwards and to the left; or the shape of the stomach may be altered, owing to active ulceration, cicatrization or to adhesions. If adherent to the liver to a large extent, the stomach is seen to move up and down with that organ in respiration. The cicatrization of an ulcer may alter the shape of the stomach, especially if on the lesser curvature. Here the snail form of stomach is produced, the pylorus being drawn upwards and to the left, with an almost vertical projection of the lower part of the greater curvature. Again, adhesions to the adjacent viscera the pancreas, hepatic or splenic flexures, may affect the shape, and check the movement of the stomach due to respiration. The adhesions also interfere with the peristaltic contractions of the organ.

The alterations in the outline of the stomach in ulcer are frequently of a plus nature, that is, something is added to the main stomach shadow, differing from cancer, where there is a subtraction from the main shadow, due to the invasions of the growth. A small fleck or knob of bismuth may be seen projecting from the main shadow, and communicating directly with it, an evidence of pathological dilatation. Its contents are moveable on manipulation, and it is in the wall of a moveable stomach. It is tender on pressure. The ulcer need not be deep to retain sufficient bismuth to show on the screen, so long as it projects from the outline of the stomach, and rarely does any bismuth remain after the stomach has emptied itself. Again there may be no diverticulum, but the presence of a slight pucker in the greater curvature, may indicate an ulcer on the lesser high up. In recent ulcer there is no depression, but often a point of tenderness moving with the stomach during respiration.

An extremely striking condition, and diagnostic of penetrating ulcer, as first pointed out by Haudek, is the presence of a sac of

bismuth adjacent to the stomach and communicating with the main body often by a smaller intermediate neck. If the direction of the perforation is upwards, and especially if the condition is extensive, a bubble of gas will collect at the highest point. Under favourable conditions, stratification of the contents may be seen, namely a bubble of gas at its highest point, an intermediate layer of semi-fluid contents, and a third layer of heavier bismuth. If the direction is downwards, the gas bubble may not be evident. Generally a mass can be felt, and the tender spot identified. On palpation this shadow is immovable and cannot be displaced. If on the posterior wall, it will be necessary to rotate the patient during the screen examination to detect the condition. It is most frequently seen on the lesser curvature, penetrating the liver or pancreas. It is commonly associated with hour-glass, either functional or organic, but may exist without it. Spasm of the pylorus with retention of the stomach contents and increased peristalsis are generally present. If the diverticulum is on the lesser curvature, the filling of the pocket may be facilitated by laying the patient on his right side; if from the posterior wall, by lying on the back.

Another extremely striking condition is hour-glass stomach. Two varieties are met with in ulcer, namely, the spasmodic and organic. The spasmodic has already been mentioned under dynamic disturbances, and is the result of an excessively deep muscular contraction which persists for a lengthy period. The organic results from the contraction of cicatricial tissue. Before making a diagnosis of hour-glass, it is advisable to examine in both the vertical and horizontal positions, or make two series of skiagrams on separate days. There is danger of mistaking an unusually deep muscular contraction for hour-glass. In hour-glass the contraction does not relax, nor does it travel towards the pylorus, as do the other peristaltic waves. Functional hour-glass is frequently seen apart from ulcer, in gastropotosis, when the tone of the muscle is good, the muscular coat adapting itself accurately to the contents. It is also seen in an atonic stomach in the vertical examination, the stomach sagging so that an upper sac, a lower sac, and an intermediate neck are produced. This disappears on lying down, the orthostatic hour-glass of Hertz. In these conditions the upper sac is usually conical or balloon-shaped, tapering into a neck at its lowest point at the centre. In organic hour-glass, the upper sac is not so likely to be conical, the connecting neck is not likely to be from the centre of the upper sac, and part of the upper sac is below and to the left of the opening into the neck. Again the functional hour-glass may have the appearance of a very deep indentation

on the greater curvature resulting from a deep muscular contraction which divides the stomach in two. An ulcer is often found opposite this on the lesser curvature. The transverse contraction is seldom found on the anterior or posterior walls. In the hour-glass of ulcer, the isthmus is generally nearer the lesser curvature; in cancer it may be nearer the greater. Hour-glass as a result of cancer is comparatively rare.

It is impossible to discuss gastric ulcer without considering duodenal. The first part of the duodenum, in which over 90 per cent. of the ulcers occur, resembles the stomach very closely in structure and in its functions, and pathological conditions are the same on both sides of the sphincter. Practically all the ulcers of the first portion occur within three quarters of an inch of the pylorus, 80 per cent. are single and over 50 per cent. are found associated with gastric ulcer. Pain is the prominent feature, commencing from one to four hours after meals, but not invariably so. Vomiting is less common (20 per cent.), and melæna occurs in 50 per cent. Hyperacidity is usually present, and constipation is the rule. As the clinical picture is often indefinite and less pronounced than in gastric ulcer, so too are the *x*-ray findings in the present state of our knowledge less pronounced. Duodenal ulcer cannot be demonstrated directly by means of the *x*-rays, but it is suggested when, with hyperacidity, the gastric peristalsis is unusually powerful in a hypertonic stomach, and the meal passes out rapidly. It is better to examine the patient lying down. If cicatrization has occurred, or adhesions are present, it is usually possible to make out some indication of their presence. The persistence of a definite shadow in the lower part of the first portion of the duodenum, almost continuous with the gastric shadow, and unaffected by gastric peristalsis, and especially if persisting after the stomach is empty, is indicative of ulcer or cicatrix. Cole of New York, who has done a great deal of investigation of the conditions in the neighbourhood of the pylorus, gives the following as radiographic indications of adhesions in that region: (1) The lumen of the affected area varies in diameter, but does not dilate to normal size. (2) Rugæ show distinctly; they have a crinkled appearance, and run transversely or obliquely. (3) The peristaltic contractions are clear-cut in the normal portion of the stomach, but cease or are distorted when they reach the adhesions. (4) The first portion of the duodenum is constricted, asymmetrical, displaced, or absent. (5) The duodenum is angular or contracted. (6) The sphincter is not clear cut and well defined, and is much wider than normal. The use of the Einhorn dilator, advocated by

Cole in investigating the duodenum, does not appear to be of practical value.

To summarize, I would say that the great majority of cases of gastric or duodenal ulcer will give some indication of their presence from the Roentgen ray examination, although at times, even a typical clinical case may yield no information, and a doubtful case may still remain doubtful. The points to be considered are, the clinical history, the tender spot, examination of the stomach contents and of the stool; increased peristalsis, spasm; the interval of time occupied by the stomach in emptying itself, retention and rarely antiperistalsis; the evidences of adhesions or of cicatrization; the contour of the organ, the presence of diverticulum, penetrating ulcer or hour-glass. By carefully considering these points, we are usually able to venture a positive opinion, for or against ulcer.

In the above, in all reference to the *x*-ray meal, it is presumed to contain bismuth, as this was the original and standard substance used. Personally, I have used barium sulphate almost entirely for some time past, and I believe it is in general use by the majority of *x*-ray workers. It is maintained that it passes out of the stomach much quicker than bismuth, possibly in one half the time, but I am not convinced that this is the case. It also passes more quickly through the small bowel, but there does not appear to be any material difference between the two substances, in their rate of progress through the large bowel.

In a paper of this nature, it is not necessary to describe the technique of the *x*-ray examination. Suffice it to say that the use of both the screen and the plate are essential, the screen affording information of far greater value than the plate. Each case should be examined at intervals up to six, twelve or even twenty-four hours, and if necessary, the findings checked up at a subsequent date. Cole's work on serial radiography emphasizes this, and the masterly work of Case, of Battle Creek, Michigan, illustrates the value of stereoscopic work in the abdomen. Cinematographic radiography is still in its infancy, its great expense at present rendering it impractical, but we do not know what developments the future will bring forth.

Finally, I would desire to pay tribute to Rieder, Holzknecht, Haudek, Jolasse, Pfahler, Groedal, Loenard, Rosenthal, Kaestel, and the many others from whose writings I have borrowed liberally, and in some cases, literally. To these men we owe a great debt, for through their industry and keen observation, they have given us another eye with which to see and study the stomach in its various moods.

TRAUMATIC ASPHYXIA WITH A REPORT OF SIX CASES*

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ON account of the comparative infrequency of traumatic asphyxia it was thought of interest to report the following cases in which this condition was present to a more or less well marked degree. All of these cases were admitted to Bellevue Hospital on the evening of February 2nd, 1913, having sustained their injuries in a stampede from a moving picture theatre after a cry of "fire" had been raised.

The condition is usually produced by pressure about the abdomen and chest persisting long enough to cause a cessation of respiration for an appreciable length of time. The patient's instinctive contraction of abdominal and thoracic muscles as a natural defence probably contributes, in part at least, to the pressure produced¹, and indeed an almost identical condition may occur following a seizure in epilepsy² or paroxysm of whooping cough.

In a typical case the patient may be unconscious if seen immediately or shortly after the injury. Cyanosis of the scalp, face, neck, and chest down to the third or fourth rib anteriorly is present. The lips and tongue may be somewhat swollen, and together with the mucous membranes exhibit the same purplish tint as the skin. The discoloration extends just over the prominence of the shoulders, and for a short distance down the back, sometimes even outlining the double triangle of the lower portion of the trapezius muscle. Closer examination of this discolored area reveals the presence of more or less scattered petechial hæmorrhages. A prominent and sometimes startling feature is the sub-conjunctival hæmorrhage.

The cyanosis and hæmorrhage obtain only in the upper part of the body, apparently on account of the lack of competent valves in the veins of this region, and in support of this explanation it has been shown that the veins of the neck can be injected in a direction against the blood stream with comparative ease, whilst considerable difficulty is encountered if this is attempted in the veins of the

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arm or leg. The infrequency of cerebral hæmorrhage is explained by the support given to the blood vessels of the brain and meninges by the intracranial pressure, analogous to the support of the retinal vessels by the intra-ocular pressure. External pressure on the skin sufficient to give support to the superficial capillaries will also prevent distension or rupture of the latter as shown in Case 5. This peculiarity was noted by Bolt³ in a case of traumatic asphyxia, where a band of normal skin was found across the forehead, the patient having been wearing a tightly fitting conductor's cap at the time of the injury. The discoloration of the skin is due to mechanical over-distension of the vessels with resultant stasis and hæmorrhages from the small capillaries.

The diagnosis is evident from the appearance and the history. The condition may be accompanied by fracture of the ribs or costal cartilages,⁴ although neither occurred in this series. It is stated that the patient may remain conscious throughout the accident, and at the time of injury complain only of sudden temporary blindness, as in cases cited by both Braun⁵ and Perthes.⁶ Retinal hæmorrhages have been noted but they are infrequent. Beatson⁷ has reported a case which on examination just after the accident showed no retinal hæmorrhages, but less than two months later showed atrophy of the optic discs at the outer aspect and great contraction of the visual fields. From these and other reported cases it appears that the urine may be normal, or show albumin and possibly red blood cells. The spinal fluid was normal in the only two cases in this series in which it was examined. The temperature as a rule shows moderate elevation though at times it may be high. Patients may complain of burning and a sense of fulness in the face and neck, apparently due to congestion in those parts. One patient in this series had great difficulty in speaking and swallowing, due to congestion and oedema of the tongue. Moist râles are sometimes present in the lungs and hæmoptysis may occur soon after the accident, or in the course of a few days, due probably to a condition in the lungs or tracheal mucous membrane similar to that seen in the conjunctiva. "Contusion pneumonia"⁶ may occur about the third day or later, and in one of these cases resulted fatally.

The only treatment given, apart from that indicated for the associated injuries, was rest in bed, light diet and sedatives for the nervous reaction which followed the shock of the injury. In the two cases showing pulmonary conditions the therapy usual in such conditions was carried out.

CASE 1. S. M., aged sixteen years, was admitted to the service

of Dr. George R. Lockwood. The patient was in coma and pulseless, but after stimulation by a hypodermic injection of camphor in oil he became extremely restless. Babinski's sign was present on each side. There was no bleeding from, or blood present in, the nose, mouth, or external auditory canals. Recent vomitus was present on face and hair. The temperature was 97.8° , pulse (when obtained) 72, respirations, 26. There was no retinal hæmorrhage, but well-marked hæmorrhages were present beneath the palpebral conjunctivæ, and there was considerable injection of the left bulbar conjunctivæ. Unconsciousness lasted for two hours, and next day the patient was mentally clear (note by Dr. Walter P. Anderton, house physician). The patient was transferred next day to the service of Dr. L. W. Hotchkiss.

There were innumerable petechial areas, not disappearing on pressure, over the scalp, neck, and chest, extending downwards as far as the second rib anteriorly, for a hand's breadth below each axilla, and to about the third spinous process posteriorly. They were also present on the external surface of each upper arm for two and a half inches from the level of the acromial process. Running transversely across the anterior aspect of the abdomen just above the umbilicus was a strip of similar discoloration about three inches wide, the ends of the strip being narrower and less distinctly marked than the central portion. The occurrence of hæmorrhage in this situation is most unusual, but might be accounted for by an abnormally free thoraco-epigastric anastomosis.

The petechial areas were present over each ear drum, in the walls of each external auditory meatus, on the soft palate, tonsils, and faucial pillars. Urinalysis was negative. The temperature rose to about 100° for four days, and on the fifth day, when the patient was discharged, the discoloured areas in the skin had faded to a great extent and appeared as faint brownish pigmentation. A section of skin taken from the discoloured portion of the chest four days after admission was reported from the pathological laboratory as showing perivascular round cell infiltration in the cutis vera but no hæmorrhage was present.

CASE 2. S. J., aged sixteen years, was admitted to the service of Dr. L. W. Hotchkiss, in a conscious but drowsy condition. Temperature was 98.8° , pulse 86, respirations 22. The face and neck showed slight cyanosis. There were petechial areas scattered over the face, scalp, neck, and upper portion of chest. On the back the discoloration formed a large triangular area whose apex, pointing downwards, reached the third dorsal spine. The lateral

limits extended to a point just below the acromial prominence of each shoulder. Anteriorly the discoloured area reached the third interspace at the sternum. Subconjunctival hæmorrhage was present in the lids of both eyes and in the bulb of the right eye. There were no retinal hæmorrhages. Petechiæ were present over both ear drums in both external auditory canals and on the soft palate. There was no bleeding from ears, nose or mouth. The following day the patient was up and about the ward and was discharged on the third day, mentally clear and with normal temperature, pulse and respiration

CASE 3. B. S., age thirty-five years, was admitted to the service of Dr L. W. Hotchkiss in a semiconscious condition, and required forcible restraint on account of her restlessness and irritability. Temperature was 102° , pulse 135, respiration 32. Her condition suggested considerable cortical irritation, the reflexes being diminished and an attitude of general flexion being assumed. The face and neck were quite cyanotic, but the colour disappeared on pressure except in numerous small petechial areas. Petechial spots were present high up between the shoulders, on the anterior surface of the chest as far as the second interspace, and in a limited number just below each breast. Subconjunctival hæmorrhage was present in the lids of both eyes and in the bulb of one eye. No retinal hæmorrhage was present on either side. Petechial spots were present on each ear drum and in the skin of the external auditory canals. The tongue was very much swollen and dark reddish purple. No definite petechiæ could be detected here, but they were present over the tonsils and faucial pillars. The urinalysis, except for a trace of albumin, was negative. During the next two days she became sufficiently conscious to recognize her family, and about this time developed a cough with scattered moist râles over both bases posteriorly. The evening temperature ran between 100° and 102° with morning remissions at first to normal. Lumbar puncture at this time gave a normal fluid under normal pressure. Two days later she showed quite a marked general improvement, although the temperature rose daily to 104° . The swelling of the tongue was subsiding gradually, although not sufficiently to allow of distinct speech. On the eighth day after admission she raised some bloody sputum. The temperature was 104° , pulse 118, and respiration 28. On the following day she showed a complete consolidation of the right lower lobe. Her condition from that time on became progressively worse, and her husband insisted upon taking her home, where she died upon the

eleventh day after the accident. No autopsy could be obtained. This case was one apparently of "contusion pneumonia."

CASE 4. J. R., an Italian boy, aged twelve years was admitted to the service of Dr. L. W. Hotchkiss in a semiconscious condition which lasted about two hours. Temperature was 98.4° , pulse 86, and respiration 22. He showed signs of cortical irritation, lying in an attitude of general flexion and resenting attempts at examination. The reflexes were diminished. There was no blood in or bleeding from nose, ears or mouth. Some cyanosis was present from the nipples upwards. Petechial spots were scattered over the face, scalp, neck and, upper part of thorax. On the back they extended in a disseminated manner over an area corresponding roughly to the double triangle of the trapezius muscle, though not quite reaching its lower limitations. On the anterior aspect of the chest they extended to the fifth rib at the mammary line. They were present over the inner side of each axilla and over the outer aspect of the upper arm for about two inches from the acromial process.

A section of the skin taken from the discoloured area over the chest was reported from the pathological laboratory as showing "Blood pigment in, hæmorrhage and œdema of the deeper layers of the corium and of the subcutaneous fat."

Both ear drums showed petechial hæmorrhages and similar spots were present in the skin of each external auditory meatus. There was considerable hæmorrhage in both eyes beneath the palpebral conjunctivæ and under the bulbar conjunctivæ sufficient to cause a well marked bulging of the latter membrane.

Six days later, when the patient was discharged, the petechial areas over the chest and face were of a brownish colour and fading rapidly, and the sub-conjunctival effusions were beginning to show the colour changes usual in a bruise. The reflexes were normal and patient was mentally clear.

CASE 5. B. L., a Russian girl, aged eighteen years, was admitted to the service of Dr. L. W. Hotchkiss in an unconscious condition and in slight shock. Temperature was 100.1° , pulse 134, and respirations 24. On regaining consciousness half an hour later she complained of fulness and burning pain in the face. This was relieved by the application of an ice bag. A Pott's fracture which was present was reduced and treated by plaster splints.

There was deep cyanosis from about the level of the fourth rib upwards. On pressure over the cheek the purplish colour disappeared but there still remained small ecchymotic spots in the

skin. On relief from pressure the purplish colour returned very rapidly. The petechiæ were present over the face, scalp and neck and extended downwards anteriorly in a scattered distribution to the level of the nipples. They were present on the outer surface of each upper arm for a distance of three inches from the acromial process. The disposition of the areas on the back between and just above the level of the shoulders conformed to the pattern of the trimming of the waist which the patient had been wearing at the time of the accident, as though some part of the skin had been supported by pressure from without, the petechial patches occurring in regular areas between these lines of support. There was considerable hæmorrhage beneath the conjunctivæ of the lids, and an excessive amount of blood beneath the bulbar conjunctivæ, so that the latter showed well marked bulging. The retinæ were slightly hyperæmic but no hæmorrhages were present. Petechiæ were present over both ear drums, in the skin of each external auditory meatus, and over the soft palate and tonsils. The urinalysis was negative.

During the next week the purplish colour in the face faded without passing through any colour change, but the petechial areas became a brownish yellow. On the eighth day she raised a small quantity of bloody sputum, which on examination was negative for tubercle bacillus, the blood having come probably from a hæmorrhagic area in the tracheal or bronchial mucuous membrane or in the lung tissue. The chest examination was negative. Two weeks after admission she developed an hysterical paralysis of the extensors of the left hand, but this cleared up rapidly under treatment with a high-frequency current. By this time the petechial areas had entirely disappeared except for an occasional spot of yellowish pigmentation. Three weeks after the accident, when the patient was discharged to the out-patient department, the subconjunctival hæmorrhages had practically disappeared.

CASE 6. P. F., a boy aged nine years, was admitted to the service of Dr. George Woolsey. (The following notes are by Dr. Forrest Lee, house surgeon.) On admission the patient was irrational, restless, and very irritable. The temperature was 102°, pulse 126, and respirations 26. The face was puffy and cyanotic and the mucous membranes were bluish. Ecchymoses were present on the chest down to the level of the third rib anteriorly. Bleeding from the nose and mouth was present, but none from the ears. Examination of the lungs was negative. No vomiting occurred. No fractures of any bones could be made out. Subconjunctival

hæmorrhage was noted the next day. On the same day œdema of the lungs developed and partially subsided under cupping and stimulation. Temperature was 106°, pulse 140, respirations 56. The next day the temperature was still high and the patient was coughing up bloody, frothy sputum. He was not so restless but still irrational. On the third day after the injury the pulmonary œdema increased and the patient died. Temperature was 106°, pulse not obtainable, and respirations 60, just before death.

The autopsy showed considerable cerebral congestion, especially in the superficial vessels, and the choroid plexus was distended, but no intracranial hæmorrhage was present. There were small hæmorrhages in the parietal pericardium, and several large hæmorrhagic areas in the lungs. Beginning broncho-pneumonia was present. The kidneys showed acute congestion.

For the opportunity of reporting these cases I wish to express my thanks to Dr. Lucius W. Hotchkiss of the First Surgical Division and to Dr. George Woolsey of the Second Surgical Division, from whose service Case 6 was reported.

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2. SYMS, *Ann. Surg.*, Phila., 1911, liv, 267.
3. R. A. BOLT, *loc cit.*
4. STIMSON, "Fractures and Dislocations," vi, Ed., 193.
5. BRAUN, *Deut. Ztschrft. für Chir.*, 1899.
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ELIZABETH C. UNDERHILL (*Journal A. M. A.*, May 2nd), gives an account of a girl student, aged twenty, who took with apparently suicidal intent the whole contents of a bottle of 100 2-grain quinine pills. There was a short stuporous period, with vomiting, followed by a short period of delirium, after which she became perfectly rational. The ordinary symptoms of tinnitus and fulness in the head were experienced but were not excessive. In a few hours, however, sight was lost completely and the pupils were widely dilated. Under treatment with evacuants, bromides and morphine to produce sleep, etc., she began to improve and gradual improvement continued until recovery seemed complete. It is possible that some of the pills passed, or were ejected by vomiting. The case is reported on account of the amount taken.

Case Reports

FOUR CASES OF THROMBOSIS OF THE LATERAL SINUS WITH RECOVERY

BY GEO. H. MATHEWSON, B.A., M.D.

DURING the year 1913, it fell to my lot to treat four cases of lateral sinus thrombosis in the Montreal General Hospital, all of which made a complete recovery after operation

CASE 1. G. R., male, Canadian, thirty years of age. On May 3rd, 1913, I had done a simple mastoid on this man on the left side. This mastoiditis resulted from an otitis of two weeks duration. He had rather severe symptoms at the time, but they disappeared after the operation, and he had been discharged and was coming to the hospital for dressing every two days, when suddenly on May 19th, he had a chill and high fever and was brought back to my ward. After observation for a few days it became quite certain that he had lateral sinus thrombosis, so on May 23rd, I operated and found a large solid clot. Free bleeding was readily got from the distal end of the sinus but very little from the lower end, so I ligated the jugular vein and then curetted the lower part of the sinus more thoroughly. Healing was prompt and uneventful. Culture showed pneumococcus.

CASE 2. B. N., male, a Pole, twenty-six years of age, was transferred to my service from the medical wards on December 7th, 1913. He had a suppurative otitis media on the right side, with high temperature at times. He had been quite well until two weeks previously. On December 10th, his temperature rose to 107° with a chill, and it was noted that the glands of the neck were much swollen. This swelling was quite sudden in onset. The following day I did a radical mastoid, and then exposed the sinus which contained a thrombus over an inch long. This was removed and the sinus curetted. Recovery was uneventful. There was no growth from the cultures in this case, but this was due to the fact that the swab was dry when it reached the laboratory.

CASE 3. J. R., male, a Pole, twenty-three years of age, was brought to the hospital on December 25th. He was semi-delirious and on admission had a temperature of 100°, which rapidly rose to 102°. There was a purulent discharge from the right ear and the

patient complained bitterly of pain in the right fronto-temporal region. Until five days previously the man had been quite well. Because of the serious condition of the patient and the rapid onset of the disease, it was decided to operate at once. I found the mastoid cells full of pus, and on removing the bone from over the sinus, the latter was found to be lying in an extradural abscess. The sinus was quite dark in colour and firm to the touch. On incision a large clot was found and removed. The next morning the temperature was 98° , but soon rose to 105° . The next day I tried to persuade him to allow me to tie his jugular vein, but he said he would sooner die than have any further operation. He ran a septic temperature until January 7th, when he consented to operation. In the meantime a blood count was made as follows: Total white cells, 28,600 per c.mm.; polymorphonuclears, 81 per cent.; small lymphocytes, 17.5 per cent.; large mononuclear, 1.5 per cent.; eosinophiles, none. On January 1st, the left knee joint became swollen and painful. A blood culture showed no growth in any media. At the operation the culture from the mastoid cells showed staphylococcus aureus, while that from the sinus gave bacillus coli.

On January 7th, I exposed the internal jugular which I ligated low down and excised in part above. It contained no clot. The following day the patient had a chill and the temperature rose to 105.4° . The next five days the temperature ran between 99° and 103° . On January 14th, he had a chill with a temperature of 107° . The next day there was but little rise, but on the sixteenth, he had another chill with a temperature of 107.4° . This same afternoon the wound in the neck was re-opened and the upper part of the vein resected. All this time the patient was semi-delirious, especially at night. For the next six days the temperature was of a septic nature, but the patient felt and looked a great deal better. On the nineteenth, the temperature rose to 107.8° , when it was found that the wound in the neck was suppurating. It was opened up and cleansed with peroxide and wiped out with tincture of iodine, and on the fourth day the temperature was practically normal for twenty-four hours. From this time there was no further marked rise in temperature, and the patient was discharged well on March 4th.

CASE 4. C. F. B., male, a Canadian, twenty-eight years of age, was admitted to my service on December 19th, 1913. He had a profuse creamy discharge from the right ear and some tenderness of the mastoid. Some ten days previously I had seen him at his

home and had performed a paracentesis on the drum membrane on account of an otitis media of three days' standing. The temperature and general condition were suggestive of sinus thrombosis, but the presence of pain and swelling in the metacarpophalangeal joint of the left thumb on December 23rd made one consider the possibility of general sepsis and endocarditis. Dr. Lafleur examined him, however, and found no symptoms of endocarditis, while the joint condition might be either rheumatism or part of a mild general sepsis. On December 25th, he had a distinct chill so the following day I cleared out the mastoid, exposed the sinus which was bathed in pus, incised it and removed a large clot. Culture from the thrombus gave a pure culture of streptococcus. A blood count on December 25th, showed: white cells, 15,600 per c.mm.; polymorphonuclears, 65 per cent.; lymphocytes, 22 per cent.; mononuclears, 13 per cent. The patient made a prompt recovery.

The mode of operation was in the main the same in all. The mastoid was exposed and the diseased bone removed, after which the wound was extended backward by removing the bone which overlay the lateral sinus. The sinus was exposed downwards as near the jugular bulb as possible and upwards toward the torcular, so that at least an inch and a half of the sinus was in full view. Then while the assistant made firm pressure on both ends of the exposed sinus I made an incision an inch long in the sinus wall, removed the clot, and then with scissors as much of the external wall of the sinus itself as I could. The pressure was then taken off the upper end of the sinus and the lumen gently curetted to remove fragments of clot, and to promote free hæmorrhage if this had not been established already.

The free exposure of a considerable length of the sinus and the application of pressure by the assistant are essential to a good operation. If these two points are attended to, one has a clear view of a bloodless field of operation, and can see which end of the sinus bleeds after incision, etc., instead of poking aimlessly about in a mess of blood.

In the first case I ligated the jugular before curetting the lower end of the sinus, and in the third case I did the ligation at a subsequent operation, while in the other two cases the jugular was not ligated. I did a simple mastoid in three cases, but in the second case I thought it wiser to do a radical, as the mastoid disease was very extensive and the man had been ill some time. Here the question arises as to whether the internal jugular should be ligated before curetting the sinus. If one takes it for granted that the danger of

a large clot getting into the heart is very small—and I have never seen the report of such an accident in otological literature—then the danger to be feared is a gradual extension of the infective process, septicæmia in other words. It would seem reasonable, then, to curette the sinus, and if after a day or two there are further symptoms of systemic infection, ligation of the jugular can be done.

I do not insist on this point, as the weight of opinion among otologists is in favour of ligation, but it must be borne in mind that this procedure prolongs the operation, which in sick patients is of considerable moment.

The short duration of the preceding ear trouble in some of these cases, especially the third, where it was only five days, is remarkable. The diagnosis of sinus thrombosis was made from the septic temperature, chills, etc., in the presence of a mastoiditis, except in the third case, where the severity of the symptoms was an absolute indication for treating the mastoiditis at once, and at the same time exploring the neighbouring parts for signs of extension. Blood cultures were attempted in the two cases that had joint affections, but failed to grow.

The successful outcome of the cases—100 per cent. of recovery—was due I believe to the fact that operation was undertaken early before the patients had time to become saturated with septic material.

A. M. CRISPIN (*Journal A. M. A.*, May 2nd), reports a case of a young woman supposedly suffering from jaundice which turned out to be a case of argyria following a course of collargol. A dose of 10 grains of hexamethylenamin given for a coryza caused a marked improvement in the patient's colouration and she was delighted with the result. The suggestion is made that if there is found another unfortunate person with dark bluish colour from argyria, hexamethylenamin might be tried.

Editorial

THE ANNUAL MEETING

THE forty-seventh annual meeting of the Association will take place in St. John, New Brunswick, July 7th to 10th. The provisional programme as arranged to date, together with details as to the railway rates, hotel accommodation, and the entertainments provided for the visitors, will be found elsewhere in this issue. There is every indication that the meeting will be a most successful one. The excellence of the programme alone justifies us in expecting a large attendance. It reflects great credit on the President-elect and the local Committee on Arrangements who have been responsible for its preparation.

We are particularly fortunate in the matter of the formal addresses. Dr. Murray MacLaren, to whose lot falls the presidential address, needs no introduction to our readers. His reputation as a surgeon and his popularity as a man speak for themselves. The address in medicine will be given by Dr. Thomas McCrae who, as an authority on the arthritides, and as collaborator with Dr. Osler in the editing of their "System of Medicine," is well known to all. One of a brilliant group of Toronto graduates who have helped to advance the fame of the Johns Hopkins Hospital, he is now professor of medicine at Jefferson Medical College, Philadelphia. The other addresses will be given by two distinguished visitors from the Old Country. Dr. Jellett, who will deliver the address in obstetrics, is the Master of the Rotunda Hospital in Dublin, an institution famous in the annals of midwifery. He is the author of three books which are deservedly popular, "A Manual of Midwifery"; "A Short Practice of Gynæcology," and a similar work on midwifery which has reached its sixth

edition. The address in surgery is to be delivered by Professor Rutherford Morison, of Durham University. He is perhaps best known to the rank and file of the profession through the operation of omentopexy for the relief of ascites in cirrhosis of the liver, the idea of which was independently conceived by him, and which is generally known as the Talma-Morison operation. It was in 1896, in association with Drummond, that he performed the first successful operation. Talma's first publication dates from 1898, although according to Koch, Van der Meulen had already in 1889, following Talma's recommendation, performed omentopexy in a case of ascites from cirrhosis, but without success. Quite recently in the *British Journal of Surgery*, Professor Morison published an interesting series of cases bringing forward some new points of view concerning bone grafts. The Committee is to be congratulated on securing the co-operation of such distinguished guests. The president's and one of the other addresses will be given at the first general session on the evening of July 7th.

The symposium on intestinal stasis will be a feature of timely interest. It will be opened by Dr. A. C. Geddes, the new professor of anatomy at McGill, who has made a particular study of the all-important anatomical factors in this condition. Drs. Cole, of New York, and Case, of Battle Creek, who are authorities on the subject, will deal with its radiological aspects. The other speakers are eminent surgeons and internists who may be relied upon to throw light on a difficult question.

There are more than one hundred contributions in the programme. Space does not permit us to speak of the Sections in detail. Suffice it to point out that the list includes an unusually large proportion of the best known names in the Canadian profession, whilst among the distinguished Americans who will contribute, one notices, in addition to those already mentioned, the familiar names of Drs. Max Einhorn, Crile, Percy Brown, Cushing, the master of brain surgery,

Torbert, Crockett, and others. In each Section there are papers of great practical and scientific interest. The programme in the *x-ray* Section demands special mention. It again proves the wisdom of the Executive in deciding, two years ago, to raise this flourishing specialty to the dignity of a section of its own. The Section of Public Health also promises to repeat its great success of last year. The public lecture by Dr. Hodgetts, of the Commission of Conservation, on health problems in Canada will doubtless be of great interest to the profession as well as to the laity. On the last day of the meeting clinics will be given at the General Public Hospital by Dr. McCrae and by Dr. Geo. E. Armstrong, who as a teacher of surgery has few equals. We would take this present opportunity to congratulate Professor Armstrong upon the honour which was recently conferred on him and, incidentally, on Canadian surgery, by his election to the presidency of the American Surgical Association.

It is nine years since the Association last met in the Maritime Provinces. The previous meetings in Halifax and St. John, as well as those held in the far West, have abundantly proved that the immense distances which many have to travel do not seriously affect the attendance, or militate against the success of our annual gatherings. St. John, at its best in July, is a city with much to attract the visitor. It is well provided with good hotels, a list of which will be found in the provisional programme on another page. The entertainments which the local physicians are providing will be particularly enjoyable. Moreover the weather is almost certain not to be unpleasantly hot.

All things considered, a record attendance and a most successful meeting may be confidently expected. And we would urge all those who can possibly afford the time not to miss this opportunity of spending a most profitable and enjoyable holiday.

AN ARMY SURGEON

THE following extract from an interesting manuscript containing the medical and surgical collections of one John Harvy, surgeon, in the time of Henry VII, was read recently by Sir William Osler before the Association of Provincial Surgeons upon their visit to the Bodleian Library in Oxford:

He that wyll be a surgyan yn the war muste electe & chuse hym a captayne of some noble lyberall man that lovyth well men, & know what he wyll lowe his surgyan a dey. Yff he be a Nobyll man that ys your captayn, he wyll lowe you as other noble men do, that ys ij^s a day unto the cheuyste surgyan, unto the second surgyan xx^d a day, the thyrd surgyan xvj^d a daye, the iiij surgyan xij^d hys seruant vj^d and a grote a pece of euery sowdyar euery moneth. And hys bauderyke muste be of hys masters colers a boutte hys necke with a spatyll before and be hynd with the kynges armys in lyke maner, be sydys the curys that ye shall haue a brode among nobyll men & other sowdyars, yff he be parfyte in hys syens & be well acquentyd, gentyll, close, honeste & mery. And also knowe what your master wyll lowe you unto your cofer. Some Nobyll men wyll low hys surgyan, yff he be lyberall, xx nobyls, some v^{li}, some v markes, some xl^s & the . . . captayne wyll cary your cofer or else ye must haue a wagon with a horse or ij amoungeste you, wherein ye shall put your tent, your coffers, your bedstede & bed & your clothes, ij or iiij sherttes, ij or iiij peyre of hosys, your cassocke or nyght gowne, your hode & hoses of fryse, your depe bottes & ford bottes your dyuers showys & all other thynges necessaries for a surgyan as ys sayde before.

One would scarcely expect the mediæval surgeon to take his bedstead with him on active service. Otherwise one cannot cavil at his wardrobe, the toothbrush at that time not having been invented. But it would be interesting to read more of his "dyuers showys & all other thynges ne-

cessares," which presumably include his surgical armamentarium. As for Master Harvy's pay, it was much more "lyberall" than it looks to modern eyes; though he doubtless deserved all the remuneration he could get. The work of the army surgeon in those days must have been unspeakably harrowing. It was not till some fifty years later that the immortal Ambroise Paré put a stop to the routine use of boiling oil and the actual cautery in the treatment of wounds and hæmorrhage. In connexion with the sums Harvy mentions, it may be interesting to note that the noble was six shillings and eight pence, the mark thirteen shillings and fourpence, and the groat at that time possibly threepence; while the actual value of the shilling may be inferred from the fact that in the year 1500 a "white horse for the king's litter" was purchased for twenty-six shillings and eightpence, and an ox could be bought for fourteen shillings and sixpence. Silver has since depreciated and the price of beef gone up.

WORKMEN'S COMPENSATION IN ONTARIO

THE question of workmen's compensation for some time now has been agitating the public mind. Its conscience has awakened with the cry of democracy and with the ever rising power of the working man. In many parts of the world an attempt has been made to frame laws which would give justice to the employer and the employee alike. In Ontario, the matter was taken up by the government in 1910, when Chief Justice Sir W. R. Meredith was appointed Commissioner and was requested to gather information upon the subject and report to the government. Sir William visited Germany, England, and the United States and, as a result of his observations, a Bill is now before the legislature. The proposed Bill is based largely upon the German law and is intended to be administered under a Commission, from whose decisions no appeal will be possible. Unfortunately, the interests of the medical profession appear to have

received less attention than might be expected, and its close connexion with the profession seems to have been overlooked in framing the provisions of the Bill. No provision whatever is made for the payment of medical services in case of accident or illness, with the exception of Section 35, which reads: "Where a workman leaves no dependants, such sum as the Board may deem reasonable for expenses of his medical attendance and his burial shall be paid to the persons to whom such expenses are due." Even this clause is rendered of little avail by the wide interpretation given to the word *dependant*, which leaves the physician or surgeon very little chance of receiving payment direct from the Board. Protest has been made by the profession. Two years ago a committee was appointed by the Academy of Medicine to present the views of the Academy to the Commissioner and application was made for a hearing, which, however, was not granted. At a recent meeting the question was taken up again by the Academy, and by the College of Physicians and Surgeons, certain amendments to the proposed Bill being suggested by both of these bodies. Nothing has been done and it is probable that nothing will be done during the present session of the legislature. It is to be regretted that the wishes of the profession in a matter which concerns it so closely should meet with so little consideration, but it seems reasonable to suppose that, in the near future, something will be done by the government to attempt equal justice for the medical man, the employee, and the employer concerned.

ONTARIO AFFILIATION

THE annual meeting of the Ontario Medical Association took place in Toronto on May 26th, 27th, and 28th. A more detailed account of the proceedings must be deferred to our next issue. We are glad, however, to be able to announce that the motion of which notice had been given, advocating the separation of the Ontario Medical Association

from the Canadian Association, was withdrawn by its proposer. In its place the following motion was substituted, and carried: "Moved in amendment by Dr. R. R. Wallace, Hamilton, seconded by Dr. N. W. Powell, Hamilton; That a committee composed of nine members of this association, four of whom are resident in Toronto, be appointed to take into careful consideration the future relationship of the Ontario and Canadian Medical Associations; to formulate the arguments for and against a continuance of the present arrangement and to make recommendation as to whether this can be modified to the manifest advantage of both associations, and of the profession generally, and to report to the next meeting of the Ontario Medical Association." The president, Dr. McGillivray, in his address, alluding to the original motion, had spoken strongly against any proposal of separation; and at the subsequent business meeting when the amending motion was under discussion all the speakers urged that whatever re-adjustment of the relationship might be found advisable, the close affiliation of the two associations should not be impaired. One objection to the present arrangement is that it may in future work to the serious financial disadvantage of the Ontario Association. The opinion was generally expressed that the best way to avoid such a result would be to increase largely the Ontario membership—already two-fifths of the whole—in the national association. The most serious objection, however, has arisen out of the omission of the Ontario Association's annual meetings in 1910 and 1913. The question of amending the constitution of the Canadian Association so that a provincial branch may hold its own annual meeting, if desired, in the same year in which the association meets in its territory, is down for discussion by the Executive at the St. John meeting.

The personnel of the Ontario Association's Committee has been chosen with care and impartiality. It consists of the following: Drs. H. J. Hamilton, H. B. Anderson, Gibb Wishart, C. L. Starr, A. T. Shillington, F. E. Wilson, John

McGregor, R. R. Wallace, and H. Mullin. It may confidently be expected that the outcome of the deliberations of this committee, and of the executive council, will be to the advantage of both associations, at the same time strengthening our mutual organization, which is in the best interests of the profession.

AN event of importance was the recent meeting of the fourth International Congress of Surgeons in New York. The previous triennial congresses of the Société Internationale de Chirurgie, the membership of which is made up of the most eminent surgeons of continental Europe, have always been held in Brussels. After the meeting about forty of the foreign surgeons made a tour of the clinical centres in the Eastern United States. It had not been intended to include Canada in the itinerary, but in consequence of the death of Dr. Roswell Park, the day which was to have been spent in Buffalo was given to Montreal, where they visited the General and the Royal Victoria Hospitals and lunched at McGill as guests of the medical faculty. It was gratifying to be able to show to men of such wide experience, both in the hospitals and the museum, examples of diseased conditions with which many of them were unfamiliar, and which evidently aroused the keenest interest. They were much impressed with the character of the buildings and their equipment, and especially with the efficiency of the nursing in our hospitals and the provision made for the nurses. It is unfortunate that the visitors were unable to afford another day to see the University of Toronto and the magnificent new General. Such visits have their influence. Canada in recent years has been much advertised abroad, but the advertising is rarely of an intellectual character. It is therefore important that men of the highest professional attainment, thinkers and writers, should find our educational institutions and hospitals as well equipped as those in their own countries. It should be remembered, however, that one of the great functions of a university is the

advancement of knowledge, and it is by the character of their scientific output that our institutions will always be judged abroad.

AN Act has been passed by the Ontario legislature to provide for the establishment of auxiliary classes for children who are mentally deficient. The Act is cited as the Auxiliary Causes Act. Subject to the approval of the Minister of Education, the Board—that is a board of education, or a board of public or separate school trustees—may provide in the city or in an adjoining township suitable buildings and establish a course of training adapted to the requirements of the pupils; residences may also be provided for pupils if deemed necessary. The pupils shall be subject to the control and custody of the board up to the age of twenty-one years; they may be admitted to the classes upon the report of a board consisting of the principal of the school, the medical inspector, and a school inspector, upon the terms prescribed in the regulations. The board will be required to provide proper medical treatment for each pupil and it may direct the medical inspector to visit pupils in their own homes; it may also provide for the transportation of pupils to and from the classes. The necessary funds “shall be raised or levied in the same manner as for the erection, establishment, improvement, or maintenance of public and secondary schools under the control of the board.” The regulations may provide also for the appointment of a duly qualified medical practitioner as inspector of the auxiliary classes.

FURTHER testimony to the wonderfully successful results of antityphoid inoculation is furnished by the experience of the United States army during the year 1913, as reported by Major Russell in the *Journal of the American Medical Association*, May 2nd. Tables are given which show that the number of cases in the United States proper have fallen

from 3.53 per thousand six years ago to 0.03 in 1913; while the death-rate has fallen from 0.28 in 1899 to 0. Only one case occurred amongst the 30,000 men serving abroad, and only three altogether in the whole army. No harmful results whatever were observed. It is also pointed out that the tuberculosis ratio has decreased since the introduction of antityphoid vaccination. In this connexion it is strange to read that in France the Société de Médecine Publique has proposed that only the soldiers serving in Africa should be compulsorily vaccinated against typhoid; and this for two reasons. First, because it cannot be known yet that the inoculation will not have a serious effect in certain subjects, paving the way perhaps for tuberculosis; and secondly, it is claimed that the fear of typhoid is the principal argument for obtaining proper sanitation and good water in the garrison towns of France. In our own country it will probably be many years before the municipal authorities can plead the rarity of typhoid as an excuse for not introducing modern sanitation.

MEDICAL inspection has been instituted in a good many of the city schools of the Dominion and, like most other things, it is proving an expensive business if done efficiently. With the exception, perhaps, of the province of British Columbia, no provision has been made as yet for the medical examination of pupils in rural schools. This matter was brought up recently at a meeting of the Ontario Educational Association by Dr. McClinton, of Elmvale. Dr. McClinton thinks that much might be done by the teachers, if occasional visits were paid to the school by a medical officer—possibly the medical health officer of the district. The chief objection to this of course is that teachers can ill afford the time necessary to keep records that would be complete enough to be of use to the medical officer. However, in default of something better, the suggestion is worth consideration.

RESEARCH work both in human and plant diseases is assuming more importance in Australia than has been the case in former years. An effort is being made by the British Science Guild in Victoria and in South Australia to induce the Commonwealth Government to establish research institutes. The Victorian branch suggests that such institutes should consist of a board of financial directors to control all business affairs, and a separate and coöperating board of scientific directors to control the scientific work. In his presidential address at the recent Australasian Medical Congress, which took place at Auckland, February 9th to 14th, Dr. A. C. Purchas spoke of the need for a medical school in Auckland and for a well-equipped research laboratory which should be established in connexion with the Auckland Hospital.

THE contributions to the fund for the London School of Tropical Medicine have now reached the sum of £71,000, to which may be added £1,000 interest while the fund has been accruing. Efficient laboratories and good sleeping accommodation for students have been provided at a cost of £15,000, and £10,000 has been devoted to research. £6,000 has been invested to provide beds for tropical cases, and the remainder has been invested in trustee securities to provide an income for the general purposes of the school.

AN index office has recently been established at 31 West Lake Street, Chicago. Dr. Bayard Holmes is the president and Mr. Aksel G. S. Josephson is the secretary and directing officer. The office has been established in order to supply bibliographies of medical subjects and translations or abstracts of articles, and to bring investigators into touch with the work of others in the same line of research. The office will have at its disposal a large amount of material in the various libraries in Chicago and it is the intention to get into touch with the other great library centres of the world.

Book Reviews

THE PATHOGENESIS OF SALVARSAN FATALITIES. By Dr. WILHELM WECHSELMANN, directing physician of the dermatological department, Rudolph Virchow Hospital, Berlin. Authorized translation by Clarence Martin, M.D. St. Louis: The Fleming-Smith Company, 1913.

It is quite well established that deaths have occurred as a result of the introduction of Salvarsan. In fatal cases the cause lies in the patient, not in the drug. Idiosyncrasy will not explain the fatality, nor will cumulative action. Insufficiency of the kidney rather than hypersensitiveness of the brain would seem to be the immediate cause; and yet an impaired kidney stands whilst the normal kidney fails. The subject is extremely complicated, but it is all set forth in this little book by Dr. Wechselmann himself.

PHARMACOLOGY—CLINICAL AND EXPERIMENTAL. A GROUNDWORK OF MEDICAL TREATMENT, BEING A TEXT-BOOK FOR STUDENTS AND PHYSICIANS. By Dr. HANS H. MEYER, Vienna, and Dr. R. GOTTLIEB, Hamburg. Authorized translation into English by JOHN TAYLOR HALSEY, M.D. Illustrated. Philadelphia and London: J. B. Lippincott Company. Agent for Canada: Chas. Roberts, Montreal.

This book has a peculiar interest for the profession in Canada. The translator, Dr. Halsey, who is now professor of pharmacology and clinical medicine in Tulane University, is well remembered from the days when he was on the staff of the McGill medical school. The labour of translating this massive volume must have been enormous, but Dr. Halsey may rest assured that his time was profitably employed. In every sense this is a new book. The authors approach the subject from the experimental standpoint and regard pharmacology merely as one portion of biology. There is a constant harking back to the consideration of the principles of physiology, and the relations with general pathology are also kept in view. Drugs are divided into two classes, namely, those which influence organs or their functions, and those which act on the agents of disease. The organothropic actions are analyzed separately for each organ or functional system. The translation is a faithful

one, but Dr. Halsey has interpolated comments or additions where he thought these would be useful for the elucidation of the text. The bibliography is very complete, especially where the works referred to deal with the experimental side of the subject. The book is profoundly scientific and represents the best that has yet been done in the subject with which it deals. The translation is a credit to American medicine.

A MANUAL OF CLINICAL DIAGNOSIS BY MEANS OF LABORATORY METHODS. By CHARLES E. SIMON, M.D., professor of clinical pathology and experimental medicine in the College of Physicians and Surgeons, Baltimore. Eighth edition, enlarged and thoroughly revised. Octavo, 809 pages, with 185 engravings and 25 plates. Cloth, \$5.00 net. Lea & Febiger, Philadelphia and New York, 1914.

When a book has reached the eighth edition, as this one has, little needs to be said. The book speaks for itself. The time has gone by when a physician could neglect to avail himself of the methods which have been evolved in the laboratories for the diagnosis of disease. In Professor Simon's book he will find a complete resumé of all useful knowledge extant upon the subject.

MODERN MEDICINE: ITS THEORY AND PRACTICE, IN ORIGINAL CONTRIBUTIONS BY AMERICAN AND FOREIGN AUTHORS. Edited by SIR WILLIAM OSLER, BART., M.D., F.R.S.; and THOMAS McCRAE, M.D. Volume II., Diseases caused by Protozoa and Animal Parasites—Diseases due to Physical, Chemical and Organic Agents—Diseases of Metabolism and of the Respiratory System. Second edition, thoroughly revised. Illustrated. Price per volume, cloth, \$5.00 net; half morocco, \$7.00 net. Philadelphia and New York: Lea & Febiger, 1914.

The profession will be interested to know that the second volume of "Modern Medicine" has just been issued. Such promptness is commendable, and is not easily achieved. Sir William Osler and his coadjutor, Dr. McCrae, are to be congratulated upon the progress of this remarkable work. There is a coherence in the articles from different hands, which gives evidence of careful and intelligent editing. The outstanding merit of the book is that it can be read with pleasure. Coming from so high an authority all other merits may be taken for granted. Amongst the Canadian

contributors are H. S. Birkett, Alexander McPhedran, and John L. Todd. Sir William Osler himself has written the extensive article on syphilis in conjunction with Dr. Churchman, and the presentation of this complicated subject is nothing short of masterly.

THE UNCONSCIOUS. THE FUNDAMENTALS OF HUMAN PERSONALITY NORMAL AND ABNORMAL. By MORTON PRINCE, M.D., LL.D. Price, \$2.00. New York: The Macmillan Company. Toronto: The Macmillan Company of Canada, Limited 1914.

A physician who is a philosopher has a wide field for the exercise of his art. He deals with the very stuff from which philosophy is made, and he is apt to adopt the philosophy of the unconscious, since it is within his daily experience that the laws of nature control in strict conformity with plans and purpose, even those beings that know nothing of the laws which they obey. At the same time he may decline to admit the traditional contention of this school, that the cause which operates in the universe in conformity with plan and purpose is itself unconscious. The matter is not simple, but Morton Prince makes it simpler by his presentation of it. A problem in philosophy can only be dealt with in the language which it has created for itself, and a writer who contents himself with the employment of the coarse terms which are adequate for the common affairs of life is at a heavy disadvantage. The alternative is to fail to make himself understood by those who understand no other terms. The question has been forced to the surface by James and Bergson, and no intelligent man can afford to be ignorant of it. With this book in his hand any reader may make a beginning, and he will find an explanation of many phenomena which were mysterious to him. Even professional philosophers will discover much material for reflection. The present volume consists of selected lectures from courses on abnormal psychology delivered at the Tufts College Medical School and later at the University of California. These again were based on a series of papers on the "Unconscious" published in the *Journal of Abnormal Psychology*, of which they are elaborations. Since the lectures were delivered a large amount of new material has been incorporated and the subject matter considered in more detail and more exhaustively than was practical before student bodies. The four additional lectures appeared in abbreviated form in the same journal under the title, "The Meaning of Ideas as Determined by Unconscious Settings."

THE PRACTICE OF SURGERY. By RUSSEL HOWARD, M.S., F.R.C.S.
With 8 coloured plates and 523 illustrations in the text.
Price, 21s. London Edward Arnold, 1914

The appearance of a new book on the practice of surgery is an event worthy of note. Especially is this the case when it comes from the London Hospital where the practice is so large and the surgery so excellent. Mr. Russell Howard has been for many years identified with that great charity, and is now assistant surgeon and lecturer in the London Hospital medical school. The book is intended for the student as an introduction to surgery, and as an aid towards the final examinations in that part of the curriculum. But as especial emphasis has been laid on diagnosis and treatment, it may readily be believed, as the author hopes, that the book will prove useful when the student will have become a practitioner. Much of the material has been drawn from the cases in the hospital and from the museum of the medical school. In addition Mr. Howard has had the assistance and coöperation of many of his colleagues, so that one may consider this a fair presentation of the practice which is followed at that ancient foundation. The book is a massive volume of over 1,200 pages, well printed and bound, as all Mr. Arnold's publications are. The illustrations have a directness and simplicity which emphasizes without obscuring the text. This "Practice of Surgery" responds to every test which we have been able to apply to it, and students may rely with confidence upon the soundness of the teaching which it contains. Especially would we commend the indications and directions for treatment apart from operative interference. The whole subject is dealt with in that categorical form which students find so useful.

CHRONIC COLITIS. ITS CAUSATION DIAGNOSIS, AND TREATMENT.
By GEORGE HERSCHELL, M.D., and ADOLPHE ABRAHAMS,
M.D. Price, 6s. net. London. New York, Bombay, and
Calcutta: Longmans, Green & Company, 1914

Up to the present American surgery has taken chronic colitis for its own, but there is a general revival of interest in the subject similar to that which was witnessed in the case of appendicitis some thirty years ago. Even then appendicitis was not a new disease, but there is no doubt that in the intervening years it has become increasingly prevalent. In a somewhat similar way chronic colitis is now coming into prominence. As the authors point out, this is in no sense a new disease, as the literature abounds with evidence

of its prevalence in former times. Voltaire was evidently a sufferer from it, and if Molière can be depended upon, it was a common malady amongst the better classes in the time of Louis XIV. This is the first book which has appeared upon the subject in English, but it embodies the best that has been issued from the continental authorities. These distinguished surgeons have brought order out of confusion. Different writers have held a diversity of opinions as to the conditions which may fairly be described by the term. In some cases different conditions have been called by the same name; in other cases the same thing has been called by different names. As long ago as 1825 it was described by Mason Good under the name of diarrhœa tubularis, and more exactly by Da Costa in 1871. The most complete historical account of the literature is given by J. J. Woodward in 'Medical and Surgical Reports of the Civil War, Vol. II.' who in turn attributes a description of the infection to Fernelius, of Paris, in 1854. The book contains an extraordinarily able presentation of the whole case from every standpoint, and treatment comes in for special consideration. Any book which is published by Messrs. Longmans, Green & Company is a good book.

ANÆSTHETICS: THEIR USES AND ADMINISTRATION. By DUDLEY WILMOT BUXTON, M.D. B.S. Fifth edition. Price, 10s. 6d. net. London: H. K. Lewis, 1914

On many occasions we have called attention to the increasing interest in the subject of anæsthetics. A practice which was at one time more or less haphazard has now become well defined and subject to a strict method. This method, with all its ramifications, has been well set forth by Dr. Buxton. His book is now in the fifth edition and will do much to make the administration of anæsthetics comfortable and safe to the patient. The operator will also be a gainer since he can rely upon the anæsthetist and devote his entire attention to the business in hand. The test of the capability of the anæsthetist is the skill with which he can use chloroform, and this subject comes in for a full consideration. It is a pleasure to note that the pioneer work done by Dr. Waller obtains adequate recognition. By every test which we have been able to apply to this book it fulfils the conditions which it was intended to meet. It is the product of an enormous experience. Debatable questions are considered with acuteness, and decision is given with rare judgement.

PRELIMINARY REPORT ON THE TREATMENT OF PULMONARY TUBERCULOSIS WITH TUBERCULIN. By NOEL D. BARDSWELL, M.D. Price, 6s. net. London: H. K. Lewis 1914.

The value of tuberculin and the treatment of tuberculosis is by no means settled, but the settlement is much advanced by this report, although it is described merely as "preliminary." It is presented by the medical superintendent of the King Edward VII Sanatorium, and is published at the request of the consulting staff. In addition, the report has been passed by Professor Karl Pearson, who has treated it by the statistical method. Certainly, if he does not leave the problem much simpler than he found it, he has brought into relief the difficulties in which a solution is involved. He considers treatment by tuberculin to be very much in the experimental stage, and to be dealt with only in a judicious experimental manner. Dr. Bardswell's experience is that the medical profession generally is not as yet sufficiently versed in the details of the administration of tuberculin to warrant them in undertaking the treatment with any confidence.

THE HYPODERMIC SYRINGE. By GEORGE L. SERVOS, M.D. Price, \$2.00 net. Newark, N.J.: Physicians Drug News Company, 1914.

The author protests that "it has not been the attempt to inject anything of an original nature," that is, into the pages of his book, not into the patient. Accordingly he gives an account of the hypodermic syringe and its possibilities. In recent years the hypodermic method of medication has enlarged in usefulness, and so far as we are aware there is no book extant upon the subject as a whole. Therefore, the present one is timely. The hypodermic syringe came into use about a century ago, and for a long time it was employed merely for the injection of morphin, but it was eventually discovered that it was applicable for the administration of many other drugs as well. By this method quick results are obtained and many untoward effects are avoided. This practice has led to increased purity and concentration in the manufacture of drugs. Originally the needle was made to penetrate only the skin but now it is extended into the veins, the deeper tissues, and even the spinal cavity. On the other hand the convenience of the method has undoubtedly led to the use of drugs for illegitimate purposes. The account which is given of the improvements

in the syringe itself is most interesting. Dr. Servoss has added a valuable book to the long series which is now appearing on the "History of Medicine."

A HISTORY OF LARYNGOLOGY AND RHINOLOGY. By JONATHAN WRIGHT, M.D., director of the department of laboratories, New York Post-Graduate Medical School and Hospital. Second Edition, revised and enlarged. Octavo, 357 pages, illustrated. Cloth, \$4.00 net. Lea & Febiger, Philadelphia and New York, 1914.

Medicine is so large a subject that even the history of it has become specialized. It would be hard to improve upon the various general treatises that now exist, or to make them much more comprehensive without danger of overloading them. With the increased importance of the various specialties a new history of them is being developed, and many of them are sufficiently old to have acquired a tradition of their own. Dr. Wright has gone through the records faithfully and has extracted everything which has a bearing upon the subject in hand. This information which was available only to the medical historian, and must be sought in various quarters, is here gathered and coördinated. The more modern history has been practically inaccessible until Dr. Wright, at great labour, has made it available. The references are extraordinarily complete, and nothing seems to have escaped this painstaking and acute historian.

A MIND REMEDY. By JOHN G. RYERSON, M.D. Boonton, N.J.

Readers who are sick of the pessimism of modern medicine, and weary of its parade of learning, its pathology, diagnosis, and therapeutics, may at last find the rest they crave in this little book. Dr. Ryerson has discovered that all diseases are one disease, and up to April, 1914, practically all were incurable. But now all are curable, and the master remedy is sugar of milk. Complete case reports are furnished, which cover all variations in disease from baldness, irregularity of teeth, and inferential apoplexy to locomotor ataxia and curvature of the spine. All great discoveries are essentially simple, and no treatment could be simpler than the administration of lactose.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A MANUAL OF α -RAY TECHNIC. By ARTHUR C. CHRISTIE. Illustrated. Philadelphia and London: J. B. Lippincott Company, 1913. Agent for Canada: Chas. Roberts, Montreal.

MENTAL DEFICIENCY (AMENTIA). By A. F. TREDGOLD, L.R.C.P., M.R.C.S. Second edition, revised and enlarged. Toronto: The Macmillan Company of Canada, Limited, 1914.

SURGERY: ITS PRINCIPLES AND PRACTICE. By ASTLEY PASTON COOPER ASHHURST, A.B., M.D., F.A.C.S. Illustrated. Price, \$6.00 net. Philadelphia and New York: Lea & Febiger, 1914.

FORMULAIRE DES SPECIALITES PHARMACEUTIQUES POUR 1914. By DR. VICTOR GARDETTE. Eighth edition. Paris: J. B. Baillièrre et fils.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE, Volume VII, No. 5, March, 1914. Price, 7s. 6d. net. London, New York, Calcutta, Bombay: Longmans, Green & Company.

MATERIA MEDICA NOTES. By JAMES A. WHITLA, L.R.C.P. and S., L.P.S.I. Price, 2s. 6d. net. Edinburgh: E. and S. Livingstone, 1913.

MODERN ANÆSTHETICS. By J. FREDERICK W. SILK, M.D. Price, 3s. 6d. net. London: Edward Arnold, 1914.

THE JUNIOR NURSE. By CHARLOTTE A. BROWN, R.N. Price, \$1.50 net. Philadelphia and New York: Lea & Febiger, 1914.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

A NEW SKIN TEST FOR PREGNANCY. BY ENGELHORN and WINTZ, of the Erlangen Universitäts-Frauenklinik. *Munchener Medizinische Wochenschrift*, No. 13, 1914.

WHEN a woman becomes pregnant there seem to be changes not only in her sexual organs, but in her whole system. Recent researches have shown that during pregnancy there is an alteration in the internal secretion of such glands as the thyroid, suprarenals, and others. We know there are present in the blood, various active substances that are the result of the splitting up of foreign albumenoids, for Abderhalden has demonstrated this fact with his two well-known methods. Other investigations have demonstrated an increase in the fat content of the blood and various hæmolytic actions; but unfortunately none of these conditions are sufficiently specific to be of value as a diagnostic sign. Although the authors could obtain no satisfactory result with the Abderhalden tests, they were convinced of the presence of the foreign albumenoids in the pregnant woman's blood. They then considered the possibility of demonstrating these substances by cutaneous vaccination by a process similar to von Pirquet's tuberculin test and Noguchi's luetin reaction. These reactions depend on the fact that the material used for the vaccination or inoculation is similar to that already in the organism. Basing their experiments on this standpoint the authors made a placental extract which they call placentin, the preparation of which is rather complicated and will be described at a future date.

The arm is inoculated with this material in exactly the same way as a von Pirquet tuberculin test is made. The reaction is noted every twelve hours and seems to be most definite after thirty-six hours. A positive reaction appears as an inflammatory swelling and reddening of the tissues around the inoculated point with a light brown colouration of the surrounding skin. A control was always made by simply scratching the skin with a needle. In every case of pregnancy a positive reaction was obtained and a negative in the non-pregnant woman. Three cases that were in-

oculated shortly before an expected menstrual period showed a very slight reddening of the arm, which however, was different to the appearance of a positive reaction. This is interesting when we recall that there have been positive Abderhalden reactions noted in the pre-menstrual period. The reaction disappears very early in the puerperium. The experiments to date have shown seventy positive reactions in the same number of pregnant woman and fifty-three negatives in the same number of non-pregnants.

THE TREATMENT OF DELIRIUM TREMENS BY DR. SCHARNKE, of the Strassburg Psychiatric Clinic. *Munchener Medizinische Wochenschrift*, No. 13, 1914.

The method of treatment of delirium tremens generally in vogue consists of digitalis, alcohol only when necessary in cases of failing heart, and baths for several hours' duration, sometimes continuing for a whole day or night. The author writes that his experience makes him strongly condemn this bath treatment because of the depressant action which is, in some cases, dangerous to the weakened heart of a patient with delirium tremens and may cause collapse. He recommends a preparation of digitalis called digalen of which three to twenty drops by mouth are given in a glass of sherry, if the patient refuses it otherwise. Veronal is the sedative of choice in doses of 15 to 30 grains. Only occasional cases require moderately large doses of alcohol but this should not be withheld if the patient refuses food and becomes much weakened. A quarter of a litre of sherry with digalen and veronal may be given three times a day. The alcohol is given solely for its caloric value in cases that refuse food, not for its stimulant action, for this is obtained by the digalen. On no account is the patient placed in a bath, but merely sponged in bed for purposes of cleanliness.

TO PAUL EHRLICH'S SIXTIETH BIRTHDAY *Munchener Medizinische Wochenschrift*.

Paul Ehrlich completed his sixtieth year on March 14th last. A few years ago, in 1909, on the occasion of his being awarded the Nobel prize, this magazine contained an outline of his life's work by A. V. Wasserman. At that time experiments with arsenic had just resulted in the production of arsenophenylglyzin. In the following year Ehrlich achieved his ambition of making an arsenic preparation that acted very slightly upon the system but was a strong parasiticide. That salvarsan is not merely an antisymphilitic

remedy but, if given early one that can actually cure syphilis is no longer doubted. Until the discovery of alvarsan, Ehrlich was the reserved venerated scientist who carried on his work far from the tumult of the streets. It is now otherwise. His name has become a slogan in the bitter warfare of the adherents and opponents of salvarsan. It is to be regretted that Ehrlich has suffered personally thereby. He is too sensitive to smilingly parry the barbed shafts of criticism, but passionately immolates rather his time and energy in vain attempts to convince those who have shut their ears to his reasoning. When Ehrlich came to Munich, Friedrich v. Müller in an after-dinner speech remarked that he had much of the poet in him. Those who are fortunate enough to come into personal contact with the man know that he has, together with the other qualities, the poet's extreme susceptibility to criticism.

A NEW METHOD OF LOOSENING THE PLACENTA. From the Gynæcological Clinic of Buenos Ayres. *Munchener Medizinische Wochenschrift*, No. 12, 1914.

The danger of the manual removal of the placenta is recognized by every one, for in spite of careful disinfection of the hands, there is always the risk of carrying infective material from the genital canal into the uterus. The author has accordingly devised a method which altogether does away with the introduction of the hand or any instrument. The method consists of the injection of sterile saline solution into the retained placenta through the vein of the umbilical cord. The vessels fill until they become large and tense; then the placenta gradually increases in volume until it is enlarged in all directions like erectile tissue; finally the vessels of the chorionic villi can no longer stand the strain and burst, allowing the injected fluid to run out from the uterine surface of the placenta. This occurrence is not the chief factor in loosening the placenta, although it lessens the area of attachment, but the organ, as it increases in size, tears away the little bridges of tissue that have been holding it in place. Then the formation of a retroplacental hydroma forces the organ away from the uterine wall and stimulates uterine contractions which expel the placenta. The author calls this procedure the hydraulic method.

G. C. HALE.

London, Ontario.

Obituary

DR. LEVI SECORD, of Brantford, Ontario, died May 4th. Dr. Secord, who was in the sixtieth year of his age, was born at Niagara-on-the-Lake. He graduated from McGill University in 1876, and first went into practice in the village of Bright, Oxford County. In 1884 Dr. Secord removed to Brantford where he soon built up a large practice; he also took an active part in civic affairs and in politics, espousing the Liberal cause. In 1892 and 1893 he was mayor of Brantford. He leaves a widow and three sons, of whom two are members of the medical profession.

DR. J. A. ASHBAUGH, medical officer of health of Windsor, Ontario, died at the Guelph sanitarium on Sunday, May 10th. Dr. Ashbaugh was forty-seven years of age. He was born in Hamilton, where he received his early education. Afterwards he went to Trinity College, Toronto, and graduated in medicine at the age of twenty-one. Dr. Ashbaugh had been practising in Windsor for the past fifteen years and had built up an extensive practice, but had been in failing health for some time. In 1903 he was appointed medical officer of health.

DR. JAMES O. EMMETT, of Fonthill, Ontario, died suddenly on May 1st, in the seventy-second year of his age. Dr. Emmett was born in the township of Grantham. He had practised at Fonthill for forty-nine years. In addition to his professional work, Dr. Emmett always evinced an interest in political and social matters and he was for some years reeve of Pelham township. He was a member of the Masonic fraternity.

DR. GEORGE H. CHRISTIE, of Lachute, Que., died May 12th. He leaves a widow, two sons and two daughters.

DR. J. H. MATHIESON, of St. Mary's, Ontario, died suddenly May 10th. Dr. Mathieson was an old resident of St. Mary's and was much respected; he was in the seventy-second year of his age.

DR. E. S. ROWE, of Vancouver, died May 10th.

DR. J. HILL, of Norwich, died on Saturday, May 16th. Dr. Hill formerly practised in Woodstock, and was well known throughout the county of Oxford. He was about sixty years of age and leaves a widow and two sons.

DR. JOSEPH A. E. LANOUE, died at Manchester, New Hampshire, May 16th. Dr. Lanouette was well known in New Hampshire partly through the splendid work he did during the smallpox epidemic in 1885. From 1873 to 1881 Dr. Lanouette served as surgeon in the Canadian Militia.

DR. M. J. AHERN, of Quebec, died on Saturday, April 18th. Dr. Ahern was born at Quebec on March 19th, 1844, and in 1868 he graduated in medicine from the University of Laval. In 1880, he was appointed professor of practical anatomy at Laval, and subsequently became the dean of the faculty of medicine. He was also chief surgeon at the Hotel Dieu Hospital at Quebec, and served on the Royal Commission on Tuberculosis.

News

MARITIME PROVINCES

SOME consternation was caused recently in Dorchester, Nova Scotia, by a report that several cases of cholera had occurred. The illness appears to have been a severe form of collitis, which is contagious and particularly dangerous to children. Eleven cases have been reported and three deaths have occurred.

A MEETING of the Fredericton Board of Health was held May 5th, when the establishment of an isolation hospital on the grounds of the Victoria Public Hospital came up for consideration. A committee was appointed to confer with the hospital trustees on the matter. Mr. H. H. Hagerman was appointed official analyst.

ONTARIO

IN the *Health Bulletin* for March, 1914, a suggestion is made that the date of canning should be stamped on all tins and blown in the glass of all bottles containing canned foods. Pork and

beans have been found which were canned more than eight years ago, also fermented canned strawberries which were purchased by the dealer over two years ago and were still for sale. Dr. C. J. Hastings is taking up the matter with the Inland Revenue Department, Ottawa, with a view to obtaining legislation which will make it necessary that the date shall be stamped, so that the purchaser may know whether the goods are freshly canned or not.

THE Connaught Home for Nurses, which has been built on the grounds of the Toronto Free Hospital for Consumptives, near Weston, was opened officially by His Royal Highness the Duke of Connaught on Friday, May 29th.

DURING the past twelve months 2,108 patients received treatment in the Kingston General Hospital; 88 deaths and 76 births occurred. In the Hotel Dieu the number of patients treated was 1,823; 62 patients died and 76 births occurred.

THE new nurses' home of the Woodstock Hospital was opened April 27th, by Dr. Farthing, the bishop of Montreal.

TROWBRIDGE was recently visited by a severe epidemic of measles; cases were reported from almost every house and it was necessary to close both the church and the school.

THE Toronto Western Hospital Bill was passed by the Private Bills Committee of the Legislature on April 21st.

A BILL was introduced recently in the Ontario Legislature to provide for the establishment of reception hospitals for the insane by cities having a population of 100,000 and over. The institutions will be under the control of the provincial secretary and the plans and site must be approved by the government. After they have been established and equipped, the cost of maintenance will be borne by the province with the exception of the amount paid by the municipality to which the patients belong. In Toronto a reception hospital has been provided in the eastern wing of the old General Hospital; it will be maintained by the provincial government.

A SPECIAL building for eye, ear, nose and throat work at the Victoria Hospital, London, was opened recently. A ward, with roof garden, for cases of tuberculosis has been added also.

DR. G. R. CRUICKSHANK has been appointed medical officer of health of Windsor, in succession to the late Dr. J. A. Ashbaugh.

A FEW weeks ago, as a result of some misunderstanding between the governors of the Welland County Hospital and the medical board, the medical staff resigned. The chief difficulty arose through the refusal of the governors to allow the medical board to be consulted on matters pertaining to the internal administration of the hospital. The matter has been adjusted, however, and two members of the medical staff have been appointed advisory members of the hospital board. The hospital was built six years ago and has been most successful.

DR. H. B. ANDERSON has been elected president of the Toronto Academy of Medicine, to succeed Dr. Herbert Hamilton. The other officers are: vice-president, Dr. W. H. B. Aikens; treasurer, Dr. W. A. Young; secretary, Dr. J. H. Elliot.

AN arrangement has been made in Fort William whereby instruction in first aid to members of the various civic departments will be given by the medical officer of health.

QUEBEC

A CONTRIBUTION of \$5,000 was made to the St. Justine Hospital at Montreal from the proceeds of the *fete des berceaux* which was held in April.

It is proposed to install a new purification plant at St. Hyacinthe. Several cases of typhoid have occurred there and it is thought probable that the water supply is the source of infection.

THE formal opening of the government immigration building, which has been erected at 172 St. Antoine Street, Montreal, took place on Monday, April 20th, in the presence of a large gathering. The Hon. Dr. Roche, minister of the interior, gave an interesting address on the problems connected with immigration and the uses to which it was intended to put the new building. Immigrants passing through Montreal will be able to obtain accommodation free of charge on condition that they purchase their own food. An hospital has been provided in case of sickness and in order to relieve the city hospitals. The building will also be used for the detention of those who are to be deported.

MANITOBA

IN order to prevent to some extent the formation of slum districts in Winnipeg the health and building by-laws are to be amended. The civic health committee has decided this year to engage two nurses to attend poor patients suffering from tuberculosis instead of contributing the usual grant to the Anti-tuberculosis Society.

THE scarlet fever hospital on Bannatyne Avenue, Winnipeg, has been converted into a convalescent home.

DR. O. T. GRAIN, of Winnipeg, has been appointed chief of the Indian department medical staff for the Dominion. Dr. Grain was formerly M.P.P. for Kildonan and St. Andrews.

DR. R. J. BLANCHARD, who for a number of years has been chief surgeon for the Manitoba division of the Canadian Pacific Railway, has resigned. He is succeeded by Dr. A. W. Moody.

ALBERTA

THE Lethbridge Board of Health and the medical officer of health apparently are divided on the question of compulsory vaccination. The medical officer of health is strongly in its favour, whereas the board of health considers that those who have prejudice against it should not be compelled to be vaccinated. In one instance, when the medical officer of health refused to sign a certificate of exemption, it was signed by the chairman of the board of health.

SASKATCHEWAN

AN Act has been passed by the legislature to regulate the practice of osteopathy and to provide for the appointment of a board of examiners. The members of the board are, D. G. Sniff, Moose Jaw; J. M. Dyer, Saskatoon; T. H. McKenzie, Weyburn; E. L. Raffenberg, Regina, chairman; and J. R. Witham, Regina, registrar. The Act provides that no person shall engage in the practice of osteopathy unless duly licensed by the board. Similar regulations are already in force in the provinces of Alberta and British Columbia.

BRITISH COLUMBIA

A CIRCULAR has been issued by the provincial board of health to remind practitioners that the department is prepared to forward the necessary means of treatment of hydrophobia. One or two cases of rabies have occurred in the province and as the disease has appeared in Oregon and in the State of Washington, it is possible, of course, that other cases may develop. The department is prepared also to distribute anti-typhoid vaccine free of charge to practitioners and qualified nurses who may apply for it. The vaccine is used extensively in Canadian Pacific Railway camps in the province of Alberta with most satisfactory results. In 1912, 5,500 men were vaccinated and only two of them contracted the disease, while of 4,500 who were not vaccinated 220 took typhoid. In 1913, 8,400 men were vaccinated and only one of them—who probably was ill at the time of the inoculation—took the disease, while of 2,000 non-vaccinated men 76 became ill with typhoid.

THE by-law to grant \$5,000 to the Vernon Jubilee Hospital has been passed. The hospital will receive an equal sum from the provincial government.

THE following have successfully passed the examination of the British Columbia College of Physicians and Surgeons. S. Eagleson, R. A. Yeld, S. McGibbon, A. D. Campbell, G. M. Flumerfelt, D. J. Millar, W. E. Ainley, E. J. Foster, N. W. Kennedy, and J. Gillies.

MEDICAL COLLEGES

Dalhousie University

DR. A. W. H. LINDSAY, professor of anatomy and secretary of the faculty of medicine at Dalhousie University, was taken ill in the Christmas holidays and had to undergo a surgical operation. For the remainder of the session his place was efficiently taken by Dr. Robinson, of the anatomical department of Toronto University.

THE pathological department of the medical faculty is now worthily housed in the new building recently erected close to the Victoria General Hospital. As soon as the faculty of arts and science leaves its rooms in the present building of the university and is accommodated in the new university buildings in course of

erection, the faculty of medicine will occupy the old university building.

THE decision in the matter of the ownership of the Copwell library is awaited with a good deal of impatience. The case is a rather curious one. By his will the late Dr. Copwell left his medical library and the interest of a sum of money to the Nova Scotia Medical Society, and to the Halifax Medical College conjointly. When the Dalhousie University took over, or absorbed, the Halifax Medical College, it acquired, as it thought, all the property of that college including its library. But when the university attempted to use the Copwell library, purchase books for it and put it under the university librarian, the Nova Scotia Medical Society reminded the university that it had still an unaltered interest in the library. All attempts to remove the deadlock having failed, the university submitted the matter to legal decision and it is this that is being anxiously looked for. If the Copwell library is declared the property of the university, there will accrue to the latter not only many standard medical text-books but a number of journals, some of them in quite long series.

ON April 30th, the fiftieth convocation was held, when fourteen candidates—thirteen men and one woman—received the degree -M.D., C.M. Four candidates graduated as doctor of dental surgery.

Queen's University

THE faculty of medicine of Queen's University has now adopted the five year medical course. A modified five year course has been in operation for several years, but the manner of spending the fifth year was optional. The new regulations will apply to all students entering in 1914 and thereafter. Most of the additional time will be given to the preliminary sciences of biology, botany, physics, and chemistry. The degrees of M.D. and C.M. will be granted on the completion of the five year course.

THE change in the curriculum will make it necessary to appoint, before next session, a professor of bio-chemistry, an assistant professor of physiology, and an assistant professor of bacteriology and hygiene. A grant of \$10,000 has been made to the faculty by the Ontario government and part of this sum will go towards the

increased expenditure rendered necessary by the proposed additions to the staff.

DR. GARRETT has been obliged through ill-health to discontinue his college duties as well as his private practice. The lectures in the senior department of obstetrics have been given by Dr. Williamson, and he and Dr. Mylks have conducted the clinics in gynæcology and obstetrics. Dr. Kennedy, Douglas lecturer in pharmacology, has retired after two years of service.

THE following is the list of those who have graduated in medicine from Queen's University. Degree of M.D., C.M.—S. M. Asselstein, M.B., Marlbank; G. D. Chown, B.A., Kingston; G. S. Clancy, B.A., Saskatoon; L. E. Crowley, M.B., Kingston; A. J. Flood, M.B., Sault Ste. Marie, Ont.; J. W. Fraser, B.A., Whitby; M. D. Graham, B.A., Arnprior; C. E. Hanna, Aultsville; A. W. Johnson, M.B., Milwaukee, Wis.; W. M. MacKay, M.B., Cornwall; G. E. MacKinnon, B.A., Wapella, Sask.; A. McCausland, M.B., Rockwood Hospital, Portsmouth; J. J. McKendry, B.A., Mountain; C. E. McLean, M.B., Brockville; G. R. Miller, M.B., Rocklyn; F. J. Murton, B.A., Portsmouth; E. M. A. Oldham, M.B., Chatsworth; W. F. Orok, B.A., Midhurst; L. J. Phillips, M.B., Weyerhauser, Wis.; C. M. Scott, B.A., Edmonton South, Alta.; C. K. Wallace, B.A., M.B., Kemptville; J. P. Walmsley, B.A., Milford; L. E. Williams, M.B., Toronto; Leo Zealand, B.A., Lindsay; W. A. Vanderburg, B.A., Decewsville.

Degrees of M.B.—D. M. Baker Owen Sound; D. E. Bell, Kingston; W. E. Berry, B.A., Robson, B.C.; Donald Black, Lang, Sask.; J. A. Blezard, Warkworth; J. T. Boyd, Port Arthur; R. M. Cairns, Ottawa; E. M. Carefoot Collingwood; R. L. Carefoot, Forres, Sask.; F. H. Clark, Victoria, B.C.; G. G. Clegg, Trenton; H. A. Cochrane, Kingston; R. D. Collier, Picton; R. V. Connors, Ottawa; M. S. Driver, Highgate; I. S. Foley, Howe Island; J. B. Galligan B.A., Eganville; N. M. Halkett, B.A., Ottawa; B. C. Hardiman, Fort William; K. E. Hollis, Hamilton, Bermuda; F. S. Jeffery, B.A., London; J. E. Kane, Kingston; C. B. Kidd, Ashton; J. A. Labelle, L'Orignal; Edmund Larocque, Alfred; Royal Lee, Gananoque; F. H. Lougher, Kingston; J. W. Mackie, Athens; O. M. Madden, Kingston; H. W. Martin, Hamilton; H. W. Matheson, Hamilton; J. F. Matheson, Owen Sound; L. J. Murphy, Ottawa; H. M. MacDonald, Hoathhead; J. E. McAskille, Highgate; H. G. MacCarthy, Kingston, Jamaica; S. R. McGregor,

B. A., Unity, Sask.; M. A. McKechnie Walkerton; I. R. McKendry, South Gower; P. M. McLachlan, Lochaber Bay, Que.; R. W. McQuay, Foxwarren, Man.; F. D. O'Connor, Sydenham; F. K. O'Connor, Kingston; W. C. O'Donoghue, Smith's Falls; Richard Smith, Hopetown, Que.; C. T. Waltbridge, North Port; W. A. Weaver, Dundas; C. K. Whitelock, Davidson, Sask.; S. A. Wilkinson, Owen Sound; E. H. Wood, Peterboro'; J. G. Wright, Carnduff, Sask.

The following is the prize list:—

Faculty prizes in anatomy, F. B. Walsh, Oxbow, Sask.; K. M. Shorey, Napanee.

Faculty prize (\$25.00) for highest marks on second year examinations in anatomy, physiology, histology and chemistry—G. F. Loughlen, Point Anne.

Faculty prize for highest percentage of marks on second year examination in *Materia Medica*—D. R. Fletcher, Ceylon, Ontario.

The N. F. Dupuis Scholarship for highest marks in chemistry of the second year, \$60.00—K. M. Shorey, Napanee, with honour of Faculty prize and New York Alumni prize.

The Dean Fowler Scholarship for highest percentage of marks on the work of the third year, value, \$60.00—J. H. Leeds, Galt.

Faculty prize for best written and practical examination in third year pathology—R. M. Filson, Kingston.

The Chancellor's Scholarship, value \$70.00, for highest percentage of marks on five years' course—M. D. Graham, Arnprior.

Medal in Surgery—D. E. Bell, Kingston, with honour of medal in medicine.

Medal in medicine—F. J. Murton—Portsmouth.

McGill University

THE Royal Society of Canada met in Montreal, May 25th to 28th. On Monday evening, May 25th, a meeting of the council took place in the new medical building of McGill University, and there the meetings were held on Tuesday also. On Tuesday evening the presidential address was delivered in the assembly hall by Dr. Frank D. Adams, who took for his subject, "The national domain in Canada and its proper conservation." The address was followed by a *conversazione*. On Wednesday the meetings were held at Laval University, and in the evening, instead of the annual popular lecture, four short addresses on popular subjects were

given in the assembly hall of the Royal Victoria College. On Thursday, the meetings were held in the new medical building. The meetings were all free to the public and were well attended.

At a recent meeting of the Corporation of McGill University, it was decided that, in future, all students must produce a certificate of vaccination before entering the university.

Western University

THE following is the list of those who have been successful in obtaining their medical degree: George W. A. Aitken, London; Bert Allison, London; A. A. Anderson, Jamaica; Samuel Bean, Byron; M. D. Campbell, St. Thomas; C. C. Cornish, Ingersoll; W. F. Freeman, London; L. Guest, London; Thomas Guilfoyle, Lucan; S. Hudson, London; Alf. Jones, London; Fred Luney, London; J. E. Mason, Red Deer, Alta.; Ed. McBain, St. Thomas; John McPherson, Dutton; A. C. Nixon, Kamloops, B.C.; Albert Phelps, London; A. Poisson, Tecumseh; W. Sorenson, Cardstone, Alta.; F. Steele, Mount Forest; Ivan Wilson, London; Harold Wismer, Manitoulin Island; Wilfred Wright, Woodstock. The gold medalist is C. C. Cornish, of Ingersoll, and the silver medalist is John McPherson, of Dutton.

THE Ontario Government has granted the sum of \$10,000 to the Western Medical College, London, Ontario.

THE board of governors have authorized the appointment of a professor of physics and a professor of physiology. This will give the medical department six full-time professors, the number required by the educational committee of the American Medical Association.

THE work of the department of pharmacology and physiological chemistry, of which Dr. James W. Crane, is the head, has been so successful that a post-graduate course is to be given this summer. It is possible that a post-graduate course in anatomy will also be given.

Alberta University

THE University of Alberta this year has conducted a pre-medical course and twenty-five students have been in attendance.

Arrangements are being made to give two years' work in the next session. Suitable buildings are in course of erection and an efficient staff will be appointed. The examinations for license to practise medicine in the province of Alberta are now conducted under the direction of the Senate of the university.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canadian Journal of Medicine and Surgery, May, 1914:

Radium in epithelioma and allied affections G. Sterling Ryerson.

Dominion Medical Monthly, May, 1913:

The therapeutics of radium R. Abbe.
Registration under the Canada Medical Act R. W. Powell.

The Western Medical News, April, 1914:

Some recent advances in our knowledge of leprosy F. L. de Verteuil.

L'Union Médicale du Canada, May, 1914:

La prostate et son hypertrophie J. A. Saint-Pierre.
La vaccination antityphique dans la pratique journalière Dr. Kalbé.

The Canadian Practitioner and Review, May, 1914:

Treatment of diabetes H. B. Anderson.
Some remarks on pneumonia in adults J. T. Fotheringham.
Report of a case of intussusception, and remarks with reference to early diagnosis and operation W. H. Pepler.

The Public Health Journal, May, 1914:

The effect of water filtration—biological and chemical	H. W. Cowan.
Isolation hospital planning and management	T. H. Whitelaw.
Public health in Saskatchewan	M. M. Seymour.
War against infantile mortality	J. A. Baudouin.
The problem of alcohol	Fraser B. Gurd.
Tuberculosis a business proposition	A. P. Reid.
Winter campaigning in Canada	J. W. Bridges.
The veterinary profession in its relation to public health	A. R. B. Richmond.

Le Montréal Médical, April, 1914:

De la flatulence. Causes et traitement	A. Robin.
La pathologie générale et les angines chez les enfants	Hutinel.
Les vaso-contractés	G. Sardou.

Medical Societies

CANADIAN MEDICAL ASSOCIATION

FORTY-SEVENTH ANNUAL MEETING, JULY 7TH TO 10TH

Provisional Programme

THE ASSOCIATION CITY

(The City of the Loyalists)

SAINT JOHN, New Brunswick, at its best in July, a city of many attractions, is situated at the mouth of the beautiful and famous River St. John, which has been called by many authorities the Rhine of America.

A few days sojourn in the city by the sea is sure to prove a pleasant holiday for the visitor, altogether apart from the professional interest attaching to the meeting of the association.

There are numerous side trips that may be taken within a short radius of the city; notably the sail up the river to Fredericton, the capital of the province, a distance of about eighty miles: and the short journey by rail to St. Andrew's-by-the-Sea, one of the finest watering places on the coast, with its splendid gold links and first class hotel accomodation.

Members from Upper Canada and the West may take the river trip to Fredericton and continue their journey home from that city.

ENTERTAINMENT

The Local Committee has made extensive preparations for entertaining the members and their families. A special entertainment will be held in the Imperial Theatre after the evening meeting of the second day, which will be participated in by the members and ladies accompanying them. On the afternoon of the third day members will be conveyed by special train to a charming spot on the shore within easy reach of the city, where a luncheon, or what is more correctly termed in that part of the world a "clam bake," will be held. On two days luncheon will be served at the Armory where the meetings are to be held. Other forms of entertainment both for the members and the ladies are being arranged.

THE PLACE OF MEETING

The meetings will be held in the magnificent new Armory only recently completed by the Dominion government.

It will be found a great convenience to the members to have all the sections as well as the general meetings held in the one building; and for this purpose the Armory is in every way splendidly adapted.

The EXHIBITS will also be placed in the building. These will be found to be one of the outstanding features of the meeting. A very large number of firms have already secured space, including some of the most prominent drug and instrument makers from Great Britain, and the members will have splendid opportunity for procuring or examining anything that may interest them along those lines. It may safely be said that the Committee on Exhibits has arranged for a display that has never been equalled at any of the annual meetings.

HOTELS

St. John is well provided with good hotels. The following is a list of the principal ones with their minimum rates per day:—

Royal.....	\$3 00 (with bath \$1.00 extra).
Victoria.....	2 50 (with bath .50 extra).
Dufferin.....	2 50 (with bath 1.00 extra).
Clifton.....	2 00
Park.....	2 00
Prince William Apartments....	2 00
Lansdowne.....	1 50
Ten Eych Hall.....	1 50

There are also other good hotels, and many private boarding houses.

Physicians should at an early date communicate directly with hotel by letter or wire, stating accommodation desired; or with the secretary of the Reception Committee, Dr. F. T. Dunlop, 149 Waterloo Street, St. John.

RAILWAY RATES

Reduced fares for the meeting have been arranged as follows: From Montreal by the Canadian Pacific and the Intercolonial railways, from all points on the latter railway, and from stations in Canada on the Atlantic Division of the Canadian Pacific, the rate will be a single fare for the return journey; from all other parts of the country, and by all lines, the rate will be a fare and one-third. These rates are available for physicians attending the meeting and for members of their families accompanying them. To take advantage of the reduced rates a physician when starting on the journey must obtain from the ticket agent a standard convention certificate properly filled in and signed by the latter. These certificates will be endorsed at St. John, first, by the secretary of the Association, and secondly, by a special agent who will be in attendance at the meeting on July 8th and 9th for this purpose. He will collect 25c in respect of each certificate which will then entitle the holder to a return ticket to his starting point, either without further charge, or at the rate of one-third fare, as the case may be. From Fort William, Ontario, and all points east, tickets for the going journey must be purchased between the dates July 3rd and 9th, both inclusive, and properly validated certificates will be honoured at St. John until July 14th, for continuous passage tickets through to the original starting point by the direct route. From points west of

Fort William, in Ontario, Manitoba, Saskatchewan, and Alberta, these dates will be June 29th to July 3rd, and July 25th, respectively; and from points in British Columbia the dates will be June 25th to 30th, and July 25th, respectively. The rate of a fare and a third from British Columbia is granted on the condition that from the entire attendance at the meeting at least one hundred standard certificates shall be collected. There is, however, practically no doubt that this condition will be fulfilled. For members from the West who desire to use the Lake route the following additional amounts will be charged, payable at the destination:—

Via C.P.S.S. line or Sarnia N.N. Co. and Port Arthur

Going all rail, returning lake and rail, \$9.00 additional.

Going lake and rail, returning same route, \$9.00 additional.

Going lake and rail, returning all rail, none.

Via Sarnia N.N. Co. and Duluth.

Going all rail, returning lake and rail, \$13.00 additional.

Going lake and rail, returning same route, \$13.00 additional.

Going lake and rail, returning all rail, none.

The Canadian Association for the Prevention of Tuberculosis meets in Halifax on July 13th and 14th, the Monday and Tuesday following the St. John meeting. Those who wish to attend both meetings and take advantage of the reduced rates, must purchase a single fare ticket from their starting point to *Halifax*, obtaining from the ticket agent a standard certificate as above, and also stop-over privileges at St. John, or a free side trip from Moncton to St. John and return, according to the route travelled. Certificates in this case will be honoured at Halifax for the return journey to points east of Fort William until July 18th. From points east of Montreal on the Intercolonial this privilege of a free side trip from Moncton to St. John will not be available. In this case the ticket should be purchased to Halifax as above, and another ticket with a second convention certificate must be purchased at Moncton for the journey from there to St. John.

Additional information of a general character may be obtained from the general secretary, Dr. W. W. Francis, 836 University Street, Montreal; of a local character from the local secretary, Dr. J. S. Bentley, 165 Charlotte Street, St. John.

The meetings of the various sections will begin at 2 p.m. on July 7th. This will be found of convenience to the western members as it will allow them to arrive by the I.C.R. at 11 a.m. or the C.P.R. at noon, leaving Montreal on Monday at 8.40 a.m. or 7.25

p.m., respectively. The first general session will take place at 8.30 p.m., July 7th, when the presidential address and the address in medicine will be presented.

On Wednesday, July 8th, meetings of sections will be held both morning and afternoon. In the evening the addresses in Surgery and in Obstetrics will be delivered. On Thursday, July 9th, the morning will be given up to the discussion on intestinal stasis. At the conclusion of this session a meeting of the Canadian Medical Protective Association will be held. In the afternoon the sections will again meet, and in the evening the public lecture will be delivered. The clinics at the General Public Hospital will take place on Friday, July 10th.

PRELIMINARY PROGRAMME

Address in Medicine: Thomas McCrae, M.D., professor of medicine, Jefferson Medical College, Philadelphia.

Address in Surgery: J. Rutherford Morison, F.R.C.S., professor of surgery, University of Durham, Newcastle-on-Tyne, England.

Address in Obstetrics: Henry Jellett, M.D., F.R.C.P.I., Master of the Rotunda Hospital, Dublin.

Public lecture: C. A. Hodgetts, medical adviser, Commission of Conservation, Ottawa: Health problems in Canada.

Combined Sections

DISCUSSION ON "INTESTINAL STASIS"

Anatomical: A. C. Geddes, Montreal.

Medical: C. F. Martin, Montreal; Max Einhorn, Boston; A. McPhedran, Toronto, and others.

Surgical: A. Primrose, Toronto; J. M. Elder, Montreal; F. N. G. Starr, Toronto; R. E. McKechnie, Vancouver, and others.

X-ray: J. T. Case, Battle Creek, Mich.; L. G. Cole, New York, and others.

Section of Medicine

W. H. B. Aikens, Toronto: Radium

H. B. Anderson, Toronto: Appendicitis as a sequel to tonsillitis.

Percy Brown, Boston: Intestinal stasis and "chronic rheumatism;" a Roentgenologic consideration of the relation between them.

Max Einhorn, New York: Peptic ulcer.

F. G. Finley, Montreal: Syphilitic aortitis

W. F. Hamilton, Montreal: Paroxymal tachycardia.

W. B. Kendall, Gravenhurst: Tuberculosis.

A. McPhedran, Toronto: The cure of intrathoracic purulent collections by aspiration, followed by injections of a formalin solution.

H. C. Parsons, Toronto: Tuberculosis in children.

A. Howard Pirie, Montreal: Lung abscess.

C. K. Russel, Montreal: Syphilis and "parasymphilis" of the nervous system and the results of treatment with salvarsan.

D. A. Shirres, Montreal: Psychic shock, and its varying effects.

H. A. McCallum London: The relation of angina pectoris to infection.

J. A. MacGregor, London: (To be announced).

J. T. Fotheringham, Toronto: The use of carbolic acid in tetanus, with description of a case.

J. Kaufmann, Montreal: Clinical significance of a knowledge of the diastolic blood pressure, and the potential difference.

T. F. Cotton, Montreal: Cardiac hypertrophy.

A. D. Blackader, Montreal: To what extent may immunity in tuberculosis be conferred by infection in early childhood?

D. Townsend, River Glade, N.B.: The early diagnosis of tuberculosis.

Dr. S. Lewis and J. Kaufmann, Montreal: A study of fifty cases of nephritis to show the value of Ambard's constant.

A Birt, Halifax: Vascular crises.

R. D. Rudolf, Toronto: Some circulatory effects of adrenalin and epinine.

MEDICAL CLINIC AT THE GENERAL PUBLIC HOSPITAL: Thomas McCrae, Philadelphia.

Section of Surgery

G. E. Armstrong, Montreal: Linitis plastica.

G. W. Crile, Cleveland: The liver in its relation to operations on the biliary tract and the stomach.

Harvey Cushing, Boston: Pituitary disorders.

J. M. Elder, Montreal: Some points in the treatment of fractures.

A. MacKenzie Forbes, Montreal: Sciatic pains, their cause and treatment.

A. E. Garrow, Montreal: Diagnosis and treatment of exophthalmic goitre, with a short report of cases.

J. H. Halpenny, Winnipeg: Tuberculosis of the spleen.

F. W. Nagle, Montreal: The selection of anæsthetics, sequences and methods.

I. Olmsted, Hamilton: (To be announced).

A. Primrose, Toronto: Hour-glass contraction of the stomach.

C. L. Starr, Toronto: Congenital dislocation of the hip.

F. N. G. Starr, Toronto: Splenectomy: indications for operation; the operation and its after-effects.

John Stewart, Halifax: Chloroform anæsthesia.

W. G. Anglin, Kingston: Subtrochanteric fractures of the femur.

W. G. Turner, Montreal: The use of the bone graft in surgery.

Wm. Hutchinson, Montreal: Renal and ureteral calculi, with a new method of removing the latter.

N. S. Fraser, St. John's, Nfld.: Rectal temperature in diagnosis of abdominal conditions.

M. Chisholm, Halifax: Injuries of the foot.

A. C. Geddes, Montreal: Recent changes in the point of view of anatomy.

F. A. C. Scrimger, Montreal: Experimental gastro-enterostomy.

J. B. Blake, Boston U.S.A.: Splenectomy in Banti's disease and allied conditions.

A. R. Kimpton, Boston, U.S.A.: Blood transfusion.

SURGICAL CLINIC AT THE GENERAL PUBLIC HOSPITAL: G. E. Armstrong, Montreal.

Section of Obstetrics and Gynæcology

G. S. Cameron, Peterborough: Puerperal infections.

J. R. Goodall, Montreal: The treatment of puerperal infections.

F. A. L. Lockhart, Montreal: Pelvic inflammation.

B. P. Watson, Toronto: Pyelitis in pregnancy.

J. R. Torbert, Boston: Some observations drawn from ten years association with the Boston Lying-in Hospital.

F. W. Marlow, Toronto: A case of chorio-epithelioma, and one of hydatid mole.

Section of Ophthalmology and Oto-Laryngology

Eugene Crocket, Boston: Ear deafness and treatment by 606.

G. K. Mathewson, Montreal: A primary syphilitic lesion on the conjunctiva.

S. H. McKee, Montreal: Interstitial keratitis.

J. W. Stirling, Montreal: Some observations on glaucoma and its treatment.

J. A. MacMillan, Montreal: Treatment of squint.

H. S. Muckleston, Montreal: A case of pharyngitis in association with erysipelas.

D. H. Ballon, Montreal: Recent investigations on the semi-circular canals and their clinical applications.

R. F. Mathers, Halifax: (To be announced).

G. S. Ryerson, Toronto: Radium.

Section of Public Health

REPORTS OF COMMITTEES:

Medical Inspection of Schools: Chairman, J. H. Halpenny, Winnipeg.

Applied Sociology: Chairman, P. H. Bryce, Ottawa.

Mental Hygiene: Chairman, Helen MacMurchy, Toronto.

Venereal Diseases: Chairman, J. G. Adami, Montreal.

CHAIRMAN'S ADDRESS: H. W. Hill, London.

G. C. Jones, Ottawa: The importance of the recent Balkan war to the Canadian medical practitioner.

Lorne Drum, Ottawa: Militia sanitation and its influence on the public health of the country.

C. J. Hastings, Toronto: Industrial diseases and industrial hygiene.

P. H. Bryce, Ottawa: The methods of conservation of food products in relation to public health.

A. P. Reid, Nova Scotia: The housing problem: a business proposition.

J. D. Pagé, Quebec: The immigrant, the profession, and the nation.

J. W. S. McCullough, Toronto: Public health in Ontario.

T. A. Starkey, Montreal: (To be announced).

J. A. Grant, Halifax: The medical profession and the militia service.

C. T. Graham-Rogers, New York: (To be announced).

F. Miller, Kentville, N.S. (To be announced).

M. M. Seymour, Regina (To be announced).

Laboratory Section

D. Fraser Harris, Halifax: The rhythm of voluntary muscular contraction and its relation to the tremor of tonus.

E. K. Maclellan, Halifax: The biological and other blood tests in the law courts.

J. Kaufmann, Montreal: (1) Wohlard's method of demonstrating the relative sizes of the cavities of the heart in dry specimens; (2) Injection of the subendocardial bursal spaces to demonstrate the auriculo-ventricular bundle.

J. Kaufmann and E. L. Judah, Montreal: A rapid colour method for the differentiation of fat in gross specimens.

J. J. Ower, Montreal: (1) Complement fixation in gonorrhea; (2) Early aneurysm of the aorta.

L. J. Rhea and E. H. Falconer, Montreal: A bacteriological study of the lymph nodes removed from a case of Hodgkin's disease.

L. J. Rhea, Montreal: (1) The comparative pathology of the tracheal lesions in whooping cough and canine distemper; (2) The comparative pathology of anterior poliomyelitis and "blind staggers" in the horse

S. H. McKee, Montreal: Demonstration with specimens, (1) Amaurotic family idiocy; (2) Retinitis pigmentosa; (3) A comparative study of the bacillus bronchi septicus and the Bordet-Gengou bacillus of whooping cough.

A. B. McCallum, Toronto: (To be announced).

X-ray Section

Percy Brown, Boston: An improved method of Roentgen technique as applied to the head, with special reference to the nasal accessory sinuses and the perisellar neighbourhood.

J. T. Case, Battle Creek Sanatorium: Gastric carcinoma.

L. G. Cole, New York: Diagnosis of gastric and duodenal ulcers, and gall-bladder infection, with or without calculi.

G. G. Corbet, St. John: Articulations.

J. L. Duval, St. John: Fractures.

W. H. Eagar, Halifax: Bone lesions (with lantern demonstration).

S. W. Ellsworth, Boston: Résumé of the evening clinic for diagnosis of the diseases of the chest.

A. W. George, Boston: (To be announced).

G. McNeill, London: (To be announced).

A. Howard Pirie, Montreal: The rugæ of the mucous membrane of the stomach in various diseases of that organ as shown by *x*-rays.

W. L. Watt, Winnipeg: The chest.

R. Wilson, Montreal: Radiography of the accessory sinuses.

ONTARIO HEALTH OFFICERS' ASSOCIATION

THE Ontario Health Officers' Association held its third annual conference in the Convocation Hall of Toronto University on Thursday and Friday, May the 7th and 8th last, under the presidency of Dr. Charles J. Hastings, medical officer of health, Toronto. There were about three hundred members present, and the programme was a most interesting and instructive one.

On the first morning of the meeting papers were given by Dr. T. W. Vardon, of Galt, on the, "Difficulties of the medical officer of health in town and country," and by Dr. John W. S. McCullough, chief officer of health, on the "Duties of the medical officer of health in Ontario." These papers were productive of very free discussion.

A luncheon was given by the city of Toronto on the first day, when an address of welcome was given by his Worship the Mayor; this was replied to by Doctors McCullough, of Toronto, Brien, of Essex, and Powers, of Rockland; Controller McCarthy and others also gave short addresses.

At the second session the president's address was given by Dr. Hastings indicating, "The value of public health matters from the social and economic sides." Dr. H. W. Hill, of the Institute of Public Health, London, gave an exhaustive paper on "The transmission of typhoid fever," and Dr. J. A. Amyot, director of laboratories, gave a capital "Interpretation of a sanitary analysis of well water." The discussion upon these subjects was prolonged, many questions were asked, and we feel sure that the members derived great benefit from these papers.

In the evening the public meeting was held in Convocation Hall where a series of moving pictures, illustrating public health questions, was given by the provincial board of health. This was followed by a lucid address upon "Therapeutic vaccines and sera," by Dr. J. G. Fitzgerald, associate professor of hygiene, University of Toronto. Dr. Fitzgerald described the difference between vaccines, serums, and antitoxins, and incidentally pointed out the great value to the province, from the work of the provincial board of health, in placing the means of prevention of rabies and typhoid

fever, as well as the treatment of diphtheria, within reach of the general public at greatly reduced prices. He pointed out that in the treatment of diphtheria, especially in cities, the very poor and the very rich were unlikely to suffer from the non-use of antitoxin in proper doses, the poor being supplied by the board of health and the rich by their own ample means; but in the case of those of the middle class the price of antitoxin has been so great that adequate use of it has not heretofore been made. In the Isolation Hospital in Toronto the death rate from diphtheria is 6.45 per cent. while the rate throughout the city is 16 per cent. The recent action of the provincial board of health in making arrangements for a supply of this product has brought down the price to about one-quarter of its former cost. There was a large attendance at the public meeting and the audience was amply repaid.

On Friday morning two papers were given upon milk. The first on "Milk supply of small cities and towns," by Dr. D. A. McKillop medical health officer of St. Thomas; the second, "How Toronto controls her milk supply," by Hoyes Lloyd, B.A.Sc., of Toronto. Both of these papers were most practical and were freely discussed.

The question of the fees paid to medical officers of health in small towns and rural districts was brought up by Dr. W. E. Crain, of Crysler. It was pointed out that in the rural districts, especially, the medical officer of health, although his tenure of office has been made secure under the Public Health Act, still continues to receive a very inadequate salary. The object of the discussion was to point out some way in which this injustice could be remedied. The subject provoked a very vehement discussion. Some members took the view that a minimum salary for these officers should be laid down by the legislature; others took the view that the medical officer of health's salary would be increased when he showed the public that he was earning more money than he now received. Finally a committee of seven members, one from each health district of the province, was appointed to discuss this question and report upon it at the next meeting of the association. The members of the committee are:—Dr. J. W. Brien, of Essex; Dr. T. W. Vardon, of Galt; Dr. Emerson Bull, of Lambton Mills; Dr. T. W. G. McKay, of Oshawa; Dr. W. E. Crain, of Crysler; Dr. W. J. Cook, of Sudbury; Dr. C. N. Laurie, of Port Arthur.

The Question Drawer was opened by Drs. Amyot and McCullough who gave answers to a large number of questions.

At the luncheon, given by the provincial board in the Parlia-

ment Buildings, the Reverend John McNeill, of Cooke's Church, delighted the audience by his humorous remarks.

In the afternoon of the second day there were two papers in reference to schools and school-children; the first on "Sanitation," by Dr. S. F. Millen, medical officer of health, Woodslee, and the second on "Inspection of school-children for efficiency," by Dr. W. E. Struthers, chief medical inspector, Toronto Public Schools. Dr. Millen made some severe criticisms of the sanitary conditions of schools throughout the province, backing up his statements by facts and figures; while Dr. Struthers gave a full description of some of the means undertaken by the board of education of Toronto for the improvement of the physical condition of the children in the public schools. These papers were ably discussed, the remarks of the various speakers showing the greatly increased interest taken in public health matters by the members of the association.

A committee on papers for the next meeting of the association was appointed to consist of:—Dr. D. B. Bentley, of Sarnia; Dr. A. E. Speers, of Burlington; Dr. T. A. Bertram, of Dundas, and Dr. J. W. S. McCullough, of Toronto.

Dr. R. W. Hall, medical officer of health, Chatham, and Dr. A. W. McPherson, Peterborough, were appointed president and vice-president respectively. The association is now on a very substantial footing, the attendance of such a large number indicating the great interest taken in public health questions.

NEW BRUNSWICK COUNCIL OF PHYSICIANS AND SURGEONS

THE annual meeting of the New Brunswick Council of Physicians and Surgeons was held at the Queen Hotel, Fredericton, March 19th. Among those who were present were Dr. A. B. Atherton and Dr. G. C. Van Wart, Fredericton; Dr. J. D. Lawson, St. Stephen; Dr. Murray McLaren, Dr. Stewart Skinner, Dr. A. F. Emery, Dr. G. G. Corbet, and Dr. Thomas Walker, St. John; and Dr. S. C. Murray, Albert. The election of officers resulted as follows: president, Dr. G. G. Corbet; treasurer, Dr. A. F. Emery; registrar, Dr. Stewart Skinner. Audit Committee, Dr. Thos. Walker and Dr. W. F. Roberts; Registration Committee, Dr. Murray MacLaren and Dr. A. F. Emery; Examination Committee, Dr. Murray MacLaren, Dr. Thomas Walker and Dr. G. G. Corbet; Laws Committee, Dr. G. C. VanWart, Dr. A. B. Atherton and Dr.

J. D. Lawson; Prosecuting Committee, Dr. G. G. Corbet, Dr. A. F. Emery and Dr. S. C. Murray; Professional Examiners, Dr. W. A. Ferguson, Dr. Wm. Warwick, Dr. T. D. Walker, Dr. G. G. Melvin, Dr. J. S. Bentley and Dr. W. E. Rowley; Matriculation Examiners, W. J. S. Myles and W. M. McLean.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The tenth regular meeting of the society was held Friday evening, February 20th, 1914, Dr. D. F. Gurd, president, in the chair.

PATHOLOGICAL SPECIMENS: Series by Dr. E. J. Mullally.

1. Liver removed from male aged thirty-seven; chronic alcoholism extending over a period of twenty years. Shows extensive cirrhosis with marked icing of liver, a condition of hyaloseriosis.

2. Stomach and œsophagus from same patient who entered hospital on account of bleeding from stomach; there is an erosion in the mucosa and an open blood vessel in the stomach from which the patient bled to death. Had a number of hæmorrhages, some very extensive, 30 or 40 oz. The œsophagus shows varices which are frequently found in conditions of cirrhosis of the liver.

3. Trachea and aorta removed at autopsy from female aged fifty-three. Entered hospital on account of severe cough and dyspnoea which had been present for a period of ten weeks. History of illness over ten years, after whooping cough. X-ray showed an aneurysm of the aorta. She had repeated hæmorrhages by mouth from the lungs and finally died from one of these. At autopsy extensive ulceration of trachea just at bifurcation. Supposition was that it was primarily syphilitic but sections showed beginning adenocarcinomatous tissue; it had extended through the cartilages and into the aorta which was immensely dilated, and this was the aneurysm seen by x-ray. The ulceration of the bifurcation of the trachea caused the persistent cough and finally eroded its way into the aorta and caused death.

DISCUSSION: Dr. J. M. Elder: Did this patient suffer from previous repeated attacks of hæmorrhage and was it supposed that this hæmorrhage came always from the aorta or from the ulcerated surface of the trachea?

Dr. Mullally: The repeated hæmorrhages occurred just a few weeks prior to death.

Dr. J. M. Elder: I had occasion within the last ten days to see a condition which was clinically diagnosed as syphilitic cirrhosis of the liver, producing marked ascites, and the liver in that case was covered with, not the "icing" as in the present specimen, but patches of granulation here and there. I had never seen a liver like it and I am rather interested to know whether such a liver is typical of a syphilitic liver as distinct from the alcoholic hob-nail type. Beyond the fact that the patient gave a positive Wassermann, and might have had syphilis, there was nothing to show that she had it. The ordinary syphilitic remedies had no effect whatever, and I was called upon to do a transplantation of the omentum with a view of trying to relieve the ascitic condition. The result has not been encouraging so far as relief to the portal circulation goes.

Dr. H. B. Cushing: The liver case was a beautifully typical example of cirrhosis, the patient practically inhabited the hospital for three years; the only thing that was not typical was that he lived so long; usually we expect the end in a few weeks or months at most in these advanced cases. He had this condition for five years with this ascites continuing all the time, and finally died of hæmorrhage of the stomach. He had umbilical hernia and obstruction of the bowels, and was operated on to relieve this on one of the occasions when he was in the hospital.

CASE REPORTS: (1). Fractures, with illustrative cases, Dr. J. M. Elder.

1. Fracture dislocation of the elbow joint from a fall.

2. Fracture through the anatomical neck of the humerus. Patient was struck by an automobile and lay unconscious in hospital for ten days with concussion, ribs broken, and much shock.

3. Fracture through the neck of the femur since September. Has been in a hospital since with extension but a false joint formed.

4. Long spiral fracture of the femur in a boy of fifteen. Could not be kept in position and so was plated; infection of plate, removal; excellent results, no shortening.

5. Fracture of tibia with possible fracture of fibula four years ago; mal-union with great over-riding of ends of tibia. Recently fell and refractured it. With all the over-riding there was no lameness. Old fracture cut out; bone transplant from rib inserted; result excellent. This case illustrates that the transplant acts merely as a trelliswork for new bone formation.

6. Fracture of radius, really a Colle's fracture. Plated and perfect anatomical position obtained.

DISCUSSION: Dr. F. R. England: I have been much interested

in these important cases presented by Dr. Elder and I wish to congratulate him on the excellent results he has obtained, more especially upon the shoulder case. I have for some time been doing a certain amount of bone plating and wiring in selected cases. I am much interested in the subject of fractures and their treatment, and I should like to ask Dr. Elder if he finds union is apt to be interfered with by the introduction of a plate; that is, does he think the presence of a plate is likely to interfere with the osteogenetic powers of the fractured bone? From my experience I am inclined to think that it does. In a few of my cases union was delayed but was rapid and complete after removal of the plate. I have also, several times, removed plates and screws introduced by other surgeons for sinuses with non-union, and after their removal healing has been rapid and bony union firm. In the case of fracture of the ulna, I think Dr. Elder would have secured, in all probability, an equally good result without operative treatment or even the aid of the x-ray. Reduction of the elbow is not generally difficult, and the plate in this case, judging from the radiograph, was not of any particular service. I do not intend to say that plating should not be done in selected cases; I simply say that in those cases where I have found it necessary to plate I have felt more anxiety regarding the ultimate result than I have in the cases where the fragments could be locked and held in apposition by external splints without the introduction of any foreign body.

Dr. J. M. Elder: Dr. England asks if the presence of the plate is a predisposing cause to non-union or delayed union; undoubtedly any foreign body predisposes to delay and may induce non-union. If one can lock these bones, that is the ideal way, but sometimes you cannot do that, and then the plate will serve a useful purpose to retain the bones in position. Plating, like anything else, requires a good careful apprenticeship. You have in the first place to get a drill that exactly fits the screw nail, and these things must be done under the strictest aseptic precautions. I am quite satisfied if a good functional result is obtained; and I might say here that I think it is absurd to produce x-ray plates in a court of justice as is done in some cases; I do not think anyone untrained is capable of reading them. I recommend plating in cases where you cannot get results without it.

Dr. J. Alex. Hutchison: Plating of fractures is now in very general use. My own practice is to plate those cases in which reduction is not satisfactory or where the reduction cannot be maintained by ordinary dressings. There can be no doubt that

bony union is not as rapid in cases where a plate has been used, further, a mild grade of infection is not uncommon. This infection disappears with the removal of the plate. The introduction of z-rays and their use in the treatment of fractures has brought about a demand for better apposition than was formerly considered necessary. Certain sharp oblique fractures of the tibia, for instance, are difficult to keep in place, here a nail or plate is of great value. The use of a nail is not new as it is quite twenty years since I used an ordinary sidewalk spike in the treatment of a sub-trochanteric fracture of the femur. In the presence of compound fractures, I do not hesitate in selected cases to introduce a plate temporarily. The danger of a plate with a large open wound is far outweighed by the final result, avoiding the bad displacement so often present in compound conditions.

(2). HÆMATURIC NEPHRITIS, by Dr. F. S. Patch.

(3). SYPHILITIC REINFECTION, Dr. R. E. Powell.

Dr. R. P. Campbell: I do not see any other explanation for it than that we are here dealing with another case of reinfection. Since Dr. Patch reported his series last year we have had one or two other cases. This case fills in all the requisites for a reinfection and is chiefly noteworthy from the fact that the Wassermann is as yet absolutely negative. We know that where recurrences occur the clinical manifestation is preceded by the Wassermann reaction becoming positive, whereas here we have the same condition of affairs that we have in the initial infection with syphilis, a clinical manifestation and a negative Wassermann. Here it would have been useful to have waited for the next few weeks for the development of a Wassermann and secondaries in the ordinary way. Unfortunately though this is desirable from a strictly scientific point of view it is not advisable from a clinical standpoint. I believe Dr. Powell's case can stand without it.

Dr. M. Lautermann: I have seen six or seven cases of reinfection, four in my own work, and Dr. Powell's case is the most convincing I have come across.

Dr. F. R. England: Ricard used to say that patients suffering from tertiary lesions were safe as far as propagating the disease was concerned; I would like to ask if this is the case, though we are now told that these tertiary cases have the active virus present.

PAPER: The future of dermatology, by Dr. A. Freedman.

DISCUSSION: Dr. D. P. Anderson: I feel that up to the present dermatologists practically have not helped us out very much in these persistent skin diseases, for instance psoriasis. If Dr. Freed-

man's contention is true that many of these diseases are due to the excretion of irritating substances from the sweat glands from the serum of the blood, we would expect to find lesions in those particular sites where we get the most abundant secretion of sweat, the arm pits, etc., but as a matter of fact this does not occur. In psoriasis if you take off the scaly part you always find a little papule which is inflamed and there may be some obstruction there with bacterial invasion. I quite agree that in all cases of skin eruption the urine should be examined thoroughly.

The eleventh regular meeting of the society was held Friday evening, March 6th, 1914, Dr. J. M. Elder in the chair.

LIVING CASE: Dr. Colin K. Russel. Myotonia dystrophica.

CASE REPORTS: 1. Four cases of lateral sinus thrombosis, Dr. G. H. Mathewson. (See page 508).

DISCUSSION: Dr. R. H. Craig: I wish to congratulate Dr. Mathewson upon the successful outcome of his cases. I have had several patients during the past year suffering from sinus thrombosis. My recoveries have been about fifty per cent. It has been my experience that if an early diagnosis is made and an early operation performed the patient has a fair chance of recovery; if the thrombus extends down into the jugular and back towards the torcular herophili, the patient usually dies. As these cases are frequently the result of neglected acute otitis media I would like to urge and impress upon the general practitioner the necessity of early incision of the drum membrane (in acute otitis media). If this is done not only is the patient's hearing saved, but very few cases of mastoiditis and correspondingly fewer intracranial complications occur.

Dr. H. S. Muckleston: I had one case at the Alexandra Hospital and one at the Royal Victoria with fifty per cent. mortality. The child at the Alexandra was under observation from the beginning, in good condition, and about five years of age. The other was a middle aged woman, from lower Sanguinet Street, who had been sick for a long time at her home—everything against her.

Dr. J. M. Elder: I should like to know what is the relationship between lateral thrombosis and abscess of the brain.

Dr. G. H. Mathewson: It is generally thought that abscess of the cerebellum will frequently cause sinus thrombosis, but abscesses above the tentorium generally do not go that way at all. As far as Dr. Craig's remarks go, I quite agree with him that all the cases of sinus thrombosis which are seen early get better. If you get a

patient with definite pyæmia the prognosis is bad no matter what you do.

2. Tuberculosis of the iris, by Dr. Hanford McKee.

3. Case of purpura, Dr. John McCrae. Young man, aged thirty, intensely hippocratic face, flush on cheek bones, eyes bright, mind apparently unclouded, intensely ill; hiccoughs constantly and is very much depressed both in body and mind. Marked purpura of left shoulder running down back of arm and left buttock and slightly on back of thighs; dark purple areas from a pinhead up to 1 cm. in diameter, most of them raised, not disappearing on pressure, not itchy. He has no fever, pulse 90, respirations normal. On looking closely his conjunctivæ show hæmorrhages and his stools contain blood. From this time on in the hospital his stools continue to contain blood and his vomit, which occurred from time to time, also contains coffee-ground material and at times fresh blood. He complains constantly of pain in the abdomen and yet the abdomen is not tender. It bears the marks of recently applied heat but a careful examination allows one to conclude that there is no such disease as intussusception or thrombosis of his mesenteric vessels. He has a leucocytosis of 22,000.

History. He states that he has been out of sorts for three weeks; two weeks ago he was suddenly seized with sharp stabbing pain in the abdomen. He got up and walked the floor all night; next morning felt a little better and went to work. For the last week before admission he has been vomiting and, when not vomiting, troubled with severe retching; vomiting relieved him for a few minutes only. During the last week before admission several joints became sore. Nothing remarkable appears in the joints on examination.

Obviously we are dealing with an intense sepsis. Blood culture gave a strepto-bacillus, not recognized, and not subsequently verified. As to the sepsis it is an extreme one, judging by the patient's appearance, and has led to considerable wrecking of the blood vessels because he has skin hæmorrhages, conjunctival hæmorrhages, evidently intestinal hæmorrhage and hæmorrhage in the stomach. There is no blood in the urine, and it was at first entry free from albumin. The man, thanks to the care of Dr. Lewis and Dr. Henderson, is at the present time alive and is slowly coming through his attack of sepsis.

The treatment was gastric lavage, morphia and other sedatives, and four doses of collargol; each dose was 10 cc. of a one per cent. solution diluted in 200 cc. of distilled water. The purpura in the last couple of weeks has spread on to his hands and forearms. The blood pressure shows no elevation. Blood in the stools and from

the stomach continued for a short time but has gradually ceased. He has had three doses of horse serum at different times. He has improved very greatly and is at present cheerful and has a good outlook upon life; at the same time in weathering the lee shore of blood poisoning, I fear he has badly started some of his timbers as he has now approximately 30 grams of albumin to the litre. His urine, however, is not reduced in amount, but yet I feel by no means sure of the ultimate outcome in view of the fact that there is much damage wrought to his renal tissue. The question arose as to the source of the infection. He had on the right hand a large scab about an inch across which looked like a malignant pustule, but which later proved to belong to a period subsequent to the onset of the disease; so that we cannot say whence it arose.

DISCUSSION: Dr. A. T. Bazin: Was the collargol given intravenously and was there much reaction after it? Is it usual in purpura to find the spots elevated?

Dr. J. M. Elder: I should like to ask as to the coagulation test of the blood. I note that horse serum was given and I would like to know the time of coagulation before and after the administration of the serum. Was there any diminution of the hæmoglobin test or red blood cells, did they show any breaking up?

Dr. Fraser B. Gurd: As to the two possibilities as to the direct cause of the purpura, sepsis affecting degeneration of the vessel walls and poisoning of the vessel walls due to some toxic material, is it not quite within reason to assume that many at least of the purpuras are due to occlusion of arterio-capillaries and that the lesions in the skin are of the nature of infarcts similar to the infarcts which occur in heart valves, in the muscles, and in the stomach mucosa, following the injection of certain strains of streptococci? The frequent association of purpura so-called, with other rheumatic affections and also the association of similar purpuric spots in cases in which there are more massive hæmorrhages into the tissues lead me to believe that the occlusion of small vessels with subsequent degeneration of the vessel occluded is the underlying factor in the development of purpura in these cases.

Dr. Guy Johnson: I remember one case in Mexico; a young woman of nineteen, who took suddenly ill with pain in the abdomen, slight rise of temperature, vomiting, diarrhoea. Next day broke out with purpuric spots the size of a pinhead to a quarter all over the body. This never became confluent but remained there for two or three weeks and during this time she complained of cramps in the abdomen and in a few hours following the cramps she would have a certain amount of melanæna. She also, on a couple of

occasions, vomited a small quantity of blood. She got better and remained in perfect health for about a month when the whole condition recurred over again. She had a leucocytosis somewhere around 20,000; the temperature was never over 101°. I have never determined the cause of the illness but put it down to Henoch's purpura.

Dr. W. G. Reilly: I am reminded of a girl admitted to the hospital in 1895 with abdominal pain and purpuric spots. The history we obtained corresponded very closely to that of Dr. McCrae's patient save that this girl died at the end of six weeks. We looked on it as an extraordinary purpura, and at autopsy we found that these purpuric spots were little nodules containing sarcoma cells which got into the circulation from primary sarcoma of some of the abdominal glands—acute sarcomatosis.

Dr. J. McCrae: The collargol was administered intravenously; there was little or no systemic reaction but quite a marked local one, œdema of the elbow and considerable hardening of a (probably thrombosed) vein. The coagulation time of the blood was eighteen minutes. As to Dr. Gurd's suggestion that these are infarcts of the skin there is no doubt that this is sometimes a cause. There are, however, many cases in which there is no blocking of the vessels. Henoch's purpura has no greater claim to exist as a disease than has any other purpura. Purpura throughout ought to be regarded entirely as a symptom and not as a disease *per se*. It occurs to me that my own experience of these intensely hæmorrhagic cases has been unfortunate, for the last two cases died. One peculiar thing is that sometimes there is a very marked bilaterality of the lesions. The last case of which I spoke before this society was one in which every lesion existed exactly bilaterally—a collection of petechiæ on the dorsum of each foot, front of each forearm, each buttock, and each thigh. In the present case leucocytosis existed from the first and continued and fell to 13,000, hæmoglobin fifty per cent. We have at no time had hæmoglobinuria as indicating a marked hæmolysis. As to whether the spots are elevated, I have, without speaking authoritatively on the subject, thought that it was probably a matter largely of accident; that if there be a sudden large hæmorrhage there may be a considerable reaction, and therefore a palpable spot. Certainly small petechial patches are absolutely flat; large petechial hæmorrhages are sometimes raised, but in the majority of cases they are not raised and when they are it is due to this secondary reaction.

PAPER: Acute infective nephritis, by Drs. R. P. Campbell and L. J. Rhea.

The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel-St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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The Canadian Medical Association Journal

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JULY, 1914

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PRESIDENT'S ADDRESS

GIVEN AT THE ANNUAL MEETING OF THE CANADIAN MEDICAL
ASSOCIATION, ST. JOHN, JULY, 1914.

BY MURRAY MACLAREN, M.D., M.R.C.S. (Eng.), F.A.C.S.

AT the termination of a very successful meeting of the Canadian Medical Association held in London last year I had an opportunity of thanking the members of the Association for the honour they had done me by electing me to the Presidency, and I now repeat how sincere is my appreciation of this high distinction, which has so kindly been conferred upon me. I am quite conscious that I may fall short in fulfilling the requirements expected of one occupying this responsible position.

I have much pleasure in welcoming to our forty-seventh annual meeting the distinguished visitors who have come so far, from the Mother Country and the United States, and whose presence here will add to our enjoyment and greatly enhance the value of this gathering. Allow me as well heartily to welcome the members of this Association. It is proper also that I should here fully recognize the splendid work done by the St. John Committee of Arrangements and the admirable spirit which has prevailed throughout months of preparation.

This large assemblage of medical visitors has suggested to me that it might be of interest to review the history of the early and important visits of medical men to this city and province. There are three periods which seem of particular interest from this aspect.

The explorers, de Monts and Champlain, after receiving authority from Henry IV, King of France, to undertake the colonization of Acadia, sailed from Havre on the 7th of April, 1604, and arrived four weeks later at the southwest shore of Nova Scotia. De Monts and Champlain later on explored the Bay of

Fundy in a smaller boat of eight tons. Leaving their ship with the greater part of the members of the expedition at St. Mary's Bay, Nova Scotia, they took with them about a dozen men. On the 24th of June, 1604, they entered what is now known as the harbour and river of St. John, as Champlain says in his remarkable account of the exploration, "one of the largest and deepest rivers we have yet seen, which we named the River St. John, because it was on that saint's day we arrived there."

Five hundred miles on its long career,
It flows on its lordly way,
Where the lofty pine and the cedar rear
Their crests to meridian day.
Through the forest dark, as it speeds along,
It winds through the valleys fair,
Where the boatman's voice and the raftman's song
Are borne on the morning air.

It is not mentioned whether they carried a surgeon with them in the pinnace, but it is probable there was one. There were at least two surgeons in the expedition, and as the leaders were in this boat, it is likely one was with them, more especially as it is known that on a later occasion, in a voyage made in a pinnace south of Cape Cod, a surgeon was carried. Were a surgeon present when Champlain discovered St. John, as is likely, he would of course have been the first physician to visit these shores.

The stay of de Monts and Champlain in St. John was very brief as they soon proceeded to the river St. Croix, New Brunswick, to search for a locality suitable for a settlement. St. Croix Island was selected and the remainder of the expedition joined them there. As it proved, they were unfortunate in their choice. The situation of a settlement on an island prevented them, at some seasons of the year, having free access to the mainland for a supply of water and food; there was much illness resulting from their mode of living during the winter of 1604-05. Champlain gives an interesting account of the severe and fatal illness which appeared among the colonists; he says, "During the winter many of our company were attacked by a certain malady called the *mal de terre*, otherwise scurvy, as I have since heard from learned men. There were produced in the mouths of those who had it, great pieces of superfluous and drivelling flesh (causing extensive putrefaction) which got the upper hand to such an extent that scarcely anything but liquid could be taken. Their teeth became very loose and could

be pulled out with the fingers without its causing them pain. The superfluous flesh was often cut out, which caused them to eject much blood through the mouth. Afterwards a violent pain seized their arms and legs, which remained swollen and very hard, all spotted as if with flea bites; and they could not walk on account of the contraction of the muscles, so that they were almost without strength and suffered intolerable pains. They experienced pain also in the loins, stomach and bowels, had a very bad cough and short breath. In a word they were in such a condition that the majority of them could not even be raised up on their feet without falling down in a swoon. So that out of seventy-nine who composed our party thirty-five died, and more than twenty were on the point of death. The majority of those who remained well also complained of slight pains and short breath. We were unable to find any remedies for these maladies.

"A post-mortem examination was made of several bodies to investigate the cause of their malady. In the case of many, the interior parts were found mortified, such as the lungs, which were so changed that no natural fluid could be perceived in them. The spleen was serous and swollen. The liver was woody and spotted without its natural colour. The vena cava, superior and inferior, was filled with thick coagulated and black blood. The gall was tainted. Nevertheless many arteries in the middle as well as lower bowels, were found in good condition.

"In the case of some, incisions with a razor were made on the thigh where they had purple spots whence there issued a very black clotted blood. This is what was observed on the bodies of those infected with this malady. Our surgeons could not help suffering themselves in the same manner as the rest. Those who continued sick, were healed by spring which commences in this country in May. That led us to believe that the change of season restored their health rather than the remedies prescribed."

From this narrative we will notice that there were surgeons in the expedition, and that they spent the winter with the others on the St. Croix Island. Their names are not mentioned. This is probably because of the very different status of physicians in those days; they were then, of course, nothing like the important members of an expedition that they are to-day. The surgeons, however, of this expedition conducted by de Monts and Champlain, were the first to visit this portion of Canada, and it is interesting to have a record of their post-mortem findings in the cases of scurvy.

Champlain writes that the party was obliged to use bad water,

and they drank melted snow, as there were no springs or brooks; for it was not possible to go to the mainland in consequence of the great pieces of ice drifted by the tide which rises three fathoms between high and low water. Work on the hand mills was very fatiguing, since most of them slept poorly and they suffered from insufficiency of fuel, which they could not obtain on account of the ice; and they had scarcely any strength. They ate only salt meat during the winter. The latter circumstance was in Champlain's opinion the partial cause of their maladies. As a result of that unfortunate experience the members of the expedition left the island in 1605 and went to Port Royal.

At Port Royal one of the surgeons was Deschamps of Honfleur and another was Master Stephen; both of these surgeons had scurvy to deal with and both performed post-mortems, but they were evidently not the same surgeons as those who came to New Brunswick.

Later on the history of St. John is prominently associated with the name of La Tour, both on account of the eminence of Charles La Tour and the bravery and beautiful character of Madame La Tour. Professor Ganong writes me that in his work in connexion with Acadian history he has found no reference to suggest the presence of a physician with La Tour, nor does he find or recall anywhere in pre-loyalist documents anything bearing on the subject, except what I have just mentioned.

The second visit of interest from a medical point of view was on the occasion of the foundation of the city. Previous to 1783 there were merely a few log huts, where the city of St. John now stands. On the 18th of May, 1783, there landed from twenty ships three thousand men and women, in June of the same year two thousand, and in September, three thousand. These men and women who desired to retain their allegiance to the British Crown, founded the city as it were in a day. Hence it is called the "Loyalist City," and the 18th of May is annually observed in commemoration of the landing of the Loyalists.

With the Loyalists came a number of medical men, seventeen of whom are mentioned in a paper by J. W. Lawrence. Several had held commissions as surgeons in the revolutionary war. Of these physicians a number remained in St. John, others went to various portions of the province, while others returned to their old homes. Among these may be mentioned Dr. Paine who, with others in 1785, presented a memorial to the Governor-in-Council, praying that a charter of incorporation might be granted for the

institution of a Provincial Academy of Arts and Sciences. This was the initial step in the movement that led to the foundation of what is now our Provincial University. Another was Dr. Samuel Moore, who has the distinction of having performed the first post-mortem examination in St. John and the following is his report to the Honourable George Leonard, J.P.:

"Sir,—Agreeable to your request I examined the black man's head, I am perfectly satisfied he was murdered, after examining where the fork perforated the temporal bone of the skull, I sawed off the arch of the head and found the ventricles of the brain everywhere impacted with matter. The symptoms before death were also very obvious. All the Jury were spectators. Your servt., Sam'l Moore. October 6th, 1798."

The last important visits in the history of the province to which I shall refer are those of the Canadian Medical Association. The Association met here for the first time in 1873, six years after its formation, when Sir James Grant was president and there were fifty-five members present. The next visit was twenty-one years later when Dr. T. O. Harrison, of Selkirk, was president, and one hundred and nineteen attended. And now the Association is meeting for the third time in our city, and we hope there will be four hundred members here. Among the names of those who were present on the former occasions and who are no longer with us, one may mention Graham of Toronto, Wright of Ottawa, Hingston, Buller and Bell of Montreal, Bayard of St. John, Parker and Farrell of Halifax, Muir of Truro, and MacLeod of Charlottetown. Surely these names are illustrious and revered in the annals of the Association.

It is interesting on looking over the records of the previous meetings to notice that a Dominion Medical Act, inter-provincial registration, and a uniform standard of medical education for the various provinces of the Dominion were among the subjects discussed, as they had been at earlier meetings and as they continued to be for many years.

The difficulties arising in obtaining Dominion registration, especially owing to the matter not coming within the jurisdiction of the Dominion government, were fully recognized, but it is now well known to us all that, after much patience and persevering efforts, the Canada Medical Act was finally brought into existence under the able leadership of our honorary president, Sir Thomas G. Roddick.

I would here take the opportunity of announcing to you, as Sir Thomas has requested, his regret at not being able to be

present. He wrote me that he had to attend the meeting of the Dominion Medical Council in Ottawa early in June and that he would sail for Europe immediately after the most important business had been transacted, but he deeply regretted his inability to appear at this meeting, especially so because since his appointment as honorary president, in Edmonton, he had never been well enough to attend a meeting to thank the Association for the great honour they had conferred upon him.

I am sure it is the deep regret of all members of the Association that the absence of the Honorary President is due to ill health, and it is the hope of all that the visit which he is making to one of the Continental spas will result in his speedy restoration to health. We heartily congratulate Sir Thomas Roddick on the high distinction recently conferred upon him by His Majesty, which has been well merited and well bestowed.

Another subject with which the early meetings here dealt was that of vital statistics. This, with a proposal for a department of public health under the Dominion government, has been constantly brought to the attention not only of the Association and of the government from that date to the present time with, so far, little or no result. From the history of the Canada Medical Act we must derive the lesson that movements of this kind succeed after persistent effort, finally are accepted and pass into law.

The establishment of a department of public health means so much to the state, it is a matter of such tremendous and vital importance, that the Association must continue its efforts towards prevailing upon the Dominion government to undertake this great measure of reform.

A great future lies before the Canadian Medical Association; the ground of its foundation is so firm and the reasons for its existence and extension are so substantial and vital that one need not fear for its success. From its own intrinsic worth it will move on, overcoming difficulties. It is destined to become one of the principal factors in influencing Canadian public opinion and the parliaments, and in bringing about changes and reforms of the greatest value to the health and well-being of the state and the individual. While for our comfort all this is true; it does not follow that our every effort is not required to improve the position of the Association and to put it in a foremost place at the earliest opportunity.

There are several particular requirements towards the accom-

plishment of which we should direct our special energies at the present time. There are about eight thousand medical practitioners in Canada. Of these eight thousand, fifteen hundred and twenty-five are members of the Association—one-fifth of the medical population. Here is an opportunity for missionary work. There are many to be brought into the fold. We must not forget, however, that the membership has grown materially in recent years, and perhaps a steady gradual growth is of a more permanent character. Nor must we fail to remember and appreciate the splendid work which has already been done by many members of the Association; far from it. It remains for us to be the torch-bearers, to carry on work well begun.

A largely increased membership, interested in the work and objects of the Association is one of the great desiderata of the Association, and it is for the members to exert their influence, so far as is possible, toward the consummation of this object. The membership should include a good representation of the two principal races in Canada. Last year the eminent Lucas-Championnière was invited to attend this meeting. He viewed with pleasure the prospect of meeting his French-Canadian *confreres* and he had the matter under consideration when death removed his notable figure from the medical world.

A second important requirement is the amendment of the Association's Constitution and method of organization. As time has gone on the organization of the Association has been developed in accordance with what has been found successful in the great medical associations of Britain and the United States and in accord with our ideas of what is most suitable to our special conditions. Thus the organization has extended to the affiliation of provincial associations and further, to some extent, to the medical societies within the provinces, although in the case of the latter it has not yet been carried out to any great extent, much as there is to be said in its favour and much as it is to be hoped for.

That the method of organization is yet complete and final, no one would for a moment suggest; on the contrary one would only expect that time and experience would cause changes to be made from time to time to adjust the Constitution according to the general view. I would therefore urge that we exhibit patience and forbearance in the matter of development of organization; changes which are made should apply equally, as far as possible, to all parts of the country. My view is that the plan of organization in a general way is most suitable and appropriate and that it is in the

best interest of all for the provincial associations to be affiliated with the central national society.

As the Association is the national medical society of Canada so are the provincial societies the natural representatives of the provinces and bear a similar relationship, and I cannot conceive of any organization so national and suitable as that in which the provincial associations are affiliated with the national. There can hardly be a more workable method of obtaining views of medical men all over the country, nor of considering or carrying forward any general measure initiated in a provincial association. The affiliation has a broadening and educative tendency which cannot be overlooked. As I heard someone say not long ago, "*Wir lernen von ihnen, sie lernen von uns.*" It would seem highly desirable that the connecting link be firm and close in sympathy and light and flexible in its organic connexion. The great strength of the British Empire is its sentiment which holds all its parts firmly together with a certain amount of common interest, and so it should be with our medical societies.

It is desirable to eliminate all that is unnecessary in organization and as far as possible all that may prove irritating or objectionable, and in this connexion it would seem desirable that when it appears to any of the provincial associations that some modification is needed, by all means it should be brought forward, thoroughly discussed, and adjusted to the satisfaction of all.

The provision in the Constitution that a provincial association in whose territory the meeting of the Canadian Medical Association is held shall for that year have an executive meeting only, is one that might easily be abolished, so that each provincial society can do as it sees fit in this matter. There is no principle at stake and no harm would result. Some provinces will prefer not to hold a meeting, while others no doubt will do so. However, the point, it is not a difficult one, can be easily dealt with, and does not require any elaborate argument. I venture to think that modifications can be made in the regulations which will be satisfactory to all and yet not interfere with the principle involved.

The Constitution and By-laws are in a number of instances rather contradictory and defective and it would seem desirable that a revision be soon undertaken. Were one asked the question, "When is the president not the president?" the answer might be, "When he is the president." For the first year, when president-elect, he is mistaken for the president more than half the time, while in reality he has no status; and during the year following

the meeting at which he has presided he is busy keeping out of the way of the president-elect, who is actively engaged preparing for the next annual meeting.

Members have spoken to me from time to time of their wishes in reference to the third requirement—that is, a weekly JOURNAL. The JOURNAL as it now stands serves a most useful purpose and is highly creditable to the Association. A more frequent publication, however, is particularly desirable, and should be kept steadily in view by the Association. It is essential for the well-being of the Association. The difficulty is financial. I trust the Executive Council will carefully consider the matter, and if possible formulate some plan whereby the wishes of the members may be met.

Last year an important movement affecting public health was instituted in Great Britain, under the auspices of the leaders of the profession, to prevail upon the British government to appoint a royal commission whose duty it should be to make a thorough inquiry into the subject of what has been termed the hidden plague, venereal disease, with the result that such a commission is now pursuing its investigations. The forthcoming report will be received with much interest and it is hoped that it will include practical suggestions for the diminution of this prevalent disease, prevalent, indeed, when one considers that the statement is made that there are 500,000 fresh cases of venereal disease every year in Great Britain, one quarter of these being in its gravest form.

The International Medical Congress, in August of last year, held a weighty discussion on this subject, and I might quote the resolution which was passed: "Sensible of the ravages wrought by syphilis in the health of the country, and deploring the inadequacy of existing facilities for checking its dissemination, the International Congress calls upon the governments of all countries represented, first, to initiate a system of confidential notification of the disease to a sanitary authority, wherever such notification does not already obtain; second, to make systematic provision for the diagnosis and treatment of all cases of syphilis not otherwise provided for." This resolution was said to embody the irreducible minimum of what was right for all civilized governments to do.

Sir Malcolm Morris who presided at the meeting pointed out that the general public were almost entirely ignorant of the vast prevalence of the disease, the ease by which it could be communicated, the enormous number of those who were its innocent victims, its grave consequences unless promptly and effectually treated, of the means now available for its diagnosis and treatment, and the

utter inadequacy of existing facilities for making proper use of these means. Even legislators imperfectly appreciated these facts. He thought that the facts when placed on record must be pressed upon the notice of all who claimed to be in any sense leaders and teachers of the people, statesmen and politicians, the judiciary and magistracy, the press, the clergy, the teaching profession, and the members of the local government boards. An end must be put to the silence in which the subject had too long been shrouded. It is having this unfortunate secrecy in mind that I venture to bring this subject forward to-day, in order to gain for it a little further publicity and a little further consideration.

Sir Malcolm Morris well said what a monstrous, staggering anomaly it was that they were confronted with in Great Britain. The state encouraged the notification of many infectious diseases, took charge of the insane, encouraged the authorities to build fever hospitals, carried out a rigid inspection of factories and work-shops, and in a thousand other ways stretched out its long arm to safeguard the health of the community; yet it did not lift a finger to protect the nation from so devastating a disease. These remarks apply with equal force to Canada.

While a system of confidential notification would be attended with considerable difficulty, especially at the outset, and while no doubt there would be much objection to it both in the profession and outside, it would seem a necessary step to take towards the successful handling of the disease, much as it is with tuberculosis, small-pox, and other diseases.

That there is inadequate provision for the treatment of syphilis, I believe we will all admit. All public hospitals should provide sufficient accommodation for such cases and readily admit them. Those who are unable otherwise to receive proper treatment should be encouraged to go to hospital. There are public hospitals in this country whose regulations forbid the admission to its wards of patients suffering from venereal diseases. This regulation is surely a misguided one and is not in line with the best thought at the present day. It is fair to say, however, that this rule where it does exist is not always implicitly observed.

It happens that at the present time the subject of the provision of public institutions for the care of the sick holds quite prominently the attention of people in this province. While therefore it is perhaps a matter of much less interest to other portions of the country, it would seem opportune to say at least a word.

The Jordan Memorial Sanitarium at Riverglade for the treat-

ment of early cases of pulmonary tuberculosis has been receiving patients for upwards of a year, and the formal opening of the institution is arranged to take place during the present month. It is a pleasure to have this opportunity of recognizing the benevolence and generosity of the lady who has provided a beautiful and well-equipped sanitarium. May her example prove a beneficent stimulus to the liberality of many others. That the further control and maintenance has been undertaken by the provincial government is a matter which has been received with much general approval and satisfaction.

The municipality of St. John is now undertaking the construction and maintenance of a home for advanced cases of pulmonary tuberculosis. The want of such a home is urgently and constantly brought before us, and its provision will give great comfort to the sufferers and great protection to the public.

And now the extension of the General Public Hospital is a problem that is being grappled with. The building is not the thing of beauty and a joy forever that some would have us believe. No, it is out of date, inadequate, cramped; not only does it lack accommodation for patients but the provision for laboratories and special departments is woeful. Of all public institutions which may be erected in any community, the most noble of all is the public hospital. Its cost should not be too carefully scrutinized, its equipment should be absolutely modern and its facilities such that everyone, but more especially the poor, could receive the best care and treatment available, in keeping with the scientific advances of the present day. Such an institution we hope to show the members of the Association when it next visits St. John.

Private infirmaries do not conflict with the larger hospitals, but supplement them and serve a most useful purpose, an excellent example of one has recently been added to this community and no doubt you will have an opportunity of viewing it.

Before concluding my address I wish to refer briefly to a branch of medicine in Canada which is deserving of commendation, and which I think has hitherto received but little notice—the Army Medical Corps. Previous to 1899 there was no medical service; each regiment had its own medical officer, that was all. At the present time there is an organized service of 700 medical officers and 1800 non-commissioned officers and men ready for the field and, as compared to the rest of the service, it is very complete.

The inspector general of the overseas forces, Sir Ian Hamilton, in his report on the military institutions of Canada, stated that

the medical corps keeps well ahead of every other branch of the service in the completeness of its preparations for war, a state of affairs due largely to the whole-hearted support it receives from the medical profession in all its grades. A militia is, or rather ought to be, the expression, for the purposes of war, of every form of national activity, and other departments of national life, such as railways, telegraph companies, motorists and motor-cyclists, and the unions might well take a leaf out of the doctors' book and set to work to organize themselves for the defence of the country. These words should give much satisfaction to the able Director-General of the medical services and to all connected with the corps so recently formed, and to the profession generally. There is, however, ample room for much further development and the medical profession of Canada can do a great deal towards assisting in the matter. As the establishment is unlimited, members of the profession, especially those who have recently graduated, can join the corps. In this way not only does one share a public duty, to be fairly assumed by all men, but the personal benefits are not inconsiderable; the physical training and discipline for a period of several years after graduation is to be recommended. The Army Medical Corps has acted as a school of instruction in sanitation in camps and has diffused more practical knowledge of sanitation than has any other organization in the country.

The national development of medical aid is of great service, whether in time of peace or of war, in connexion with either military or civil life, and not only does the Medical Corps participate in this development, but the successful progress of such organizations as the St. John Ambulance and the Red Cross Society does much towards fitting our men and women to render aid to the suffering at all times and under all conditions.

It is written in the Apocrypha, "Honour a physician with the honour due unto him for the uses which ye may have of him; for the Lord hath created him." Here is instruction laid down for the laity. To merit the honour, the medical profession has its obligations, and how may they be met? Remember the old Scotch words, "Tak yer auld cloak aboot ye." The cloak may appear perhaps a little old-fashioned and sometimes be put aside, but when brought out again it will still have the fragrance of lavender, it is our precious heirloom, the mantle of glorious tradition, splendid achievement and high purpose. Let us take it about us.

THE METHOD OF ZADIG IN THE PRACTICE OF MEDICINE

BY THOMAS McCRAE, M.D., F.R.C.P. (Lond.)

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MR. PRESIDENT and Members of the Association: It is first my pleasant duty to express my sense of appreciation of the compliment paid in being asked to deliver the address in Medicine. An honour under any circumstances, it must be regarded as particularly so by one who, living under another flag, is your fellow-countryman. "They change their skies but not their hearts who roam."

To some of you the title of my address will bring back a story which we read in our old school readers more years ago than perhaps we care to remember. To all of you it must be familiar, but as it serves for my text perhaps you will bear with its recital.

"Zadig is supposed to have lived at Babylon in the days of King Moabdar; disgusted with life, he is said to have fled from the city to a secluded retreat on the banks of the Euphrates, where he beguiled his solitude by the study of nature. A habit of careful observation, engendered by such a life, leads to the detection of many trifles which would otherwise escape notice, and these when correctly reasoned upon may lead to discoveries that seem most mysterious and are really marvellous. Strolling along one day near a small wood, Zadig saw hastening that way one of the queen's chief eunuchs, followed by a troop of officials, who appeared like men distraught, running hither and thither as if in search of some lost treasure.

"Young man," cried the eunuch, "have you seen the queen's dog?"

Zadig answered modestly, "A bitch, I think, not a dog?"

"Quite right," replied the eunuch; and Zadig continued: "A very small spaniel who has lately had puppies; she limps with the left fore-leg, and has very long ears."

"Ah! you have seen her, then?" said the breathless eunuch.

"No," answered Zadig, "I have not seen her; and I was really not aware that the queen possessed a spaniel."

By an odd coincidence, at the very same time the handsomest horse in the king's stable broke away from his groom in the Babylonian plain. The grand huntsman and all his staff were seeking this horse with as much anxiety as the eunuch and his people the spaniel, and the grand huntsman asked Zadig if he had not seen the king's horse go that way.

"A first-rate galloper, small-hoofed, five feet high; tail three and a half feet long; cheek-pieces of the bit of 23-carat gold; shoes silver?" said Zadig.

"Which way did he go? Where is he?" cried the huntsman.

"I have not seen anything of the horse, and I never heard of him before," replied Zadig.

The grand huntsman and the chief eunuch made sure that Zadig had stolen both the king's horse and the queen's spaniel, so they haled him before the court of justice, which at once condemned him to punishment. But the sentence was hardly pronounced when the lost horse and spaniel were found. So the judges were under the painful necessity of reconsidering their decision; but they fined Zadig for saying that he had seen that which he had not seen.

The first thing was to pay the fine; afterwards Zadig was permitted to open his defence to the court, which he did as follows: "This is what happened. I was taking a walk towards the little wood, near which I subsequently had the honour to meet the venerable chief eunuch and the most illustrious grand huntsman. I noticed the track of an animal in the sand, and it was easy to see it was that of a small dog. Long faint streaks upon the little elevations of sand between the foot-marks convinced me that it was a she-dog with pendant dugs, showing that she must have had puppies not many days since. Other scrapings of the sand, which always lay close to the marks of the forepaws, indicated that she had very long ears; and as the imprint of one foot was always fainter than those of the other three, I judged that the lady-dog of our august queen was, if I may venture to say so, a little lame.

"With respect to the horse of the king of kings, permit me to observe that, wandering through the paths that traverse the wood, I noticed the marks of horseshoes. They were all equidistant. 'Ah,' said I, 'this is a famous galloper.' In a narrow alley, only seven feet wide, the dust upon the trunks of the trees was a little disturbed at three and a half feet from the middle of the path.

'This horse,' said I to myself, 'had a tail three and a half feet long, and, lashing it from one side to the other, he has swept away the dust.' Branches of the trees met overhead at the height of five feet, and under them I saw newly fallen leaves; so I knew that the horse had brushed some of the branches, and was therefore five feet high. As to his bit, it must have been made of 23-carat gold, for he had rubbed it against a stone, which turned out to be a touchstone, with the properties of which I am familiar by experiment. Lastly, by the marks which his shoes had left upon pebbles of another kind, I was led to think his shoes were of fine silver."

This story is one which may well be pondered by every practitioner and student of medicine for much of our daily task consists in carrying out this method and our success or failure in diagnosis depends greatly on how successfully we do it. It was the custom of Sir William Osler to read this story to each class as an introduction to the study of observation and diagnosis. The importance of this method in the advancement of medicine has been discussed by Dr. Balfour* and to-day its value in the practice of medicine, and especially in diagnosis, will be considered. There are many followers of Zadig described in fiction, of whom perhaps Sherlock Holmes is the best known. Poe also was attracted by the possibilities of this subject. To the reader of fiction such stories always appeal, and why a detective story should have such a fascination for the majority of us is an interesting subject of enquiry. There is the charm of the unknown and mysterious, the problem of the setting of the powers of observation and reflection against a mystery and the knowledge that at the end of the story we are to have the solution. We have such problems as part of our daily task and our work may be regarded as much like that of the criminal detective. He has a general knowledge of the members of the criminal class; we of disease in general. He knows that certain men have certain methods of work; we know the features of special diseases. It is stated that the police can classify habitual criminals more or less by their methods and, knowing the men in their city who work in a particular way, can narrow down the possibilities of a given crime to a few men. This may be described as the natural history of crime. So, too, we in medicine narrow down the possibilities. But sometimes both doctors and police are puzzled by conditions which do not fall in with the usual manifestations and cannot be classified very readily. The analogy may be carried further, for as the public

* On the Method of Zadig in the Advancement of Medicine. *Edinburgh Medical Journal*, 1900, VII., p. 200.

are often impatient over crimes which cannot be brought home to the guilty parties, so with us they may have similar feelings when we are unable to make a diagnosis promptly.

It is evident that much of the beauty of Zadig's method and the demonstrations of Sherlock Holmes consists in the fact that they work out correctly. Should they come out incorrectly the statements would sound silly. Think of a Holmes story with wrong conclusions.

The essential factor in this method consists in working back from observations of conditions to the causes which brought them about. It is often a question of deciding the doings of yesterday by the records found to-day. It is very evident that in this we have two main processes to bear in mind and keep strictly distinct, first, the collection of the observations, and second, the inferences to be drawn from them. Keeping these separate is essential to any orderly solution of our daily problems, but how difficult this is for the majority of us is brought home to every teacher. Take a group of students who are working at physical diagnosis and it is a constant struggle to keep them making observations and not giving inferences—usually from insufficient observations, if from any at all. No pains are too great to hammer home into the mind of every student the importance of keeping these two processes separate and not taking up the second until the first is as complete as he can make it. It is just as important for the practitioner as for the student, except that in the latter we are trying to form correct habits; the practitioner should have them. Some teachers are to blame in this regard. The writer once listened to a clinic in which a patient with a retracted chest following empyema was brought in. To the teacher's enquiry of "What do we see here?" the student made no answer. The professor answered his own question with "Fibroid lung." Well, perhaps he did see it—with the eye of faith, but that is not a good eye to use alone in diagnosis—and the student, if he saw with the same eye, could not give reasons for the faith that was in him.

It is an interesting subject of discussion as to whether, having made a mistake, there is any choice between the first and second division. Which is the worse error, to fail to observe certain conditions, or to observe them and interpret them incorrectly? In the writer's opinion the first is much the worse error. Observation is a matter of patience, training and thoroughness, in all of which a man may improve himself, but the use which he makes of his observations is partly a matter of his mental equipment. True he

can train his powers of thought and judgment to some extent, but we vary greatly in the quality of our cerebral cells, and the saying of the father of medicine, "Experience is fallacious and judgment difficult," is always true. To observe correctly and decide wrongly is sure to happen to the best of us, but to observe carelessly happens only when we permit it. Perhaps it is not entirely within our power always to prevent this. There are times when the keenest mind seems to miss what may be obvious. The routine of seeing a patient every day may dull the perceptions and what is startlingly obvious to a fresh eye may have escaped observation entirely. Yet here sometimes, perhaps often, it is because there has been a lack of searching rather than a lack of reflection. It is evident that if the first stage—the collection of the facts—is improperly done, we have not the basis for the second and it is bound to be wrong. The game is hopelessly lost from the start. How important, therefore, to give every effort to the collection of our facts.

It is essential, as already said, to keep in mind the two stages of the process—the collection of the facts and the inferences to be drawn from them. Let us discuss first the collection of the observations. How can a student best be trained to do this and how can a practitioner improve his capabilities of observation? If one has started properly as a student, his training as a practitioner goes on more or less automatically. Many of us may not have learned it as students and have, so to say, to educate ourselves. In this there are two principal things to be considered, first, the importance of method, and second the importance of inspection.* The acquirement of method is more or less possible for us all. Some few have it by inheritance and deserve no credit; for the majority it is a matter of hard discipline. It is only by adhering rigidly to a definite routine with patient after patient and day after day that a proper reflex can be obtained. The value of this can be illustrated both by history-taking and physical examination. In the former many points are brought out which are missed if routine questions are not asked in regard to every system of the body. Examples of the importance of routine examination occur to all of us; in how many cases does a routine examination of the urine give information of value; how often does a routine examination of the eyes give a clue to the diagnosis? It is a favourite saying of the laity that such and such a doctor can make a diagnosis at a glance. There

* It is hardly necessary to say that to lay emphasis on inspection is not to diminish the value of the other means of examination, but the man who inspects thoroughly is rarely wanting in the other methods.

never was a greater mistake. The principal difference between a good and a bad diagnostician is usually a matter of thoroughness and method. Brains count, of course, but the man who has not collected his facts has but little chance to use his brains.

In the beginning one has to determine that every point is going to be investigated in regular order, and it is important that this order should be invariable, for if one switches about from one routine to another many things will be missed. Take, for example, examination of the head; general features are noted first and particular ones second. It makes no difference whether the eyes or ears are examined first, but the order should always be the same, for if one is accustomed to examine the ear first and the eye afterwards and with a given patient begin with the eye, the ear may readily be overlooked. A haphazard method usually goes with slipshod observations and careless thinking. To practise order and system requires steady adherence to a given plan until the order of events becomes unconscious. With training one observation follows another without any effort and a glance will do what formerly took repeated observations. The student or practitioner has to keep himself to the routine of noting point after point in its order and not to be tempted to look into some interesting condition first. There are some curious instances of this, as, for example, the recognition of precordial bulging. If this is not done at the onset of inspection—if a wide impulse or some other point catches the attention first—it will very rarely be done subsequently, unless some other sign demands its reconsideration. It may be said that this is unnecessary devotion to details but no detail is too small to be worthy of attention. Take for example the examination of the ear. It would be interesting to know how many patients there are to-day whose diagnosis has not been correctly made because a tophus on the ear has not been seen. If a man made a correct diagnosis of gout and cleared up an obscure case once in five years, would it not be worth a glance at the ear in every patient? Take also the recognition of a discharge from the ear. How many of the profession are there who have not been surprised and chagrined to discover that a patient had an unrecognized aural discharge for days after he had been under observation.

The importance of this routine examination is not only for present diagnosis but also for the future. An illustration of the importance of this and of careful observation may be given. A man aged fifty years began to show nervous symptoms which need not be entered into fully. He consulted a number of neurologists

who hesitated to express a definite opinion but all feared an early stage of general paresis. This was some years ago before the days of the Wassermann reaction and spinal puncture. A most important sign in his case was the fact that his pupils were unequal. The uncertainty of the diagnosis worried him greatly and his condition became progressively worse. One day, while talking to an old physician who had long been a friend of his family but had never attended him professionally, he was giving an account of his symptoms and stated that the point which especially bothered his physicians was the persistent inequality of his pupils, to which the old man answered: "You have had that since boyhood, to my knowledge." With this point settled the doubt in regard to diagnosis was removed and the patient made a rapid recovery. In this case neither the man himself nor his wife had ever noticed the inequality. His own physician had never noticed it until the necessity for a special examination arose. Such instances are not rare and the curious inability to see things which are before us will be discussed later under the heading of inspection.

The importance of *inspection* cannot be over-estimated, but its value is often not appreciated. Ask a medical student at the end of his first course in physical diagnosis which of the four methods—inspection, palpation, percussion, and auscultation—seems to him the most important, and the most common answer is auscultation, unless his instructor has been a disciple of Zadig. This is natural, for while he has been accustomed to using his eyes—carefully or carelessly—all his life, the use of the stethoscope comes as a new experience and appeals to his sense of working with some kind of apparatus. The value of inspection is twofold, both in the information it gives of itself and the fact that it starts one right in the further methods of examination. No average man can be a good diagnostician if he begins his examination by percussion or auscultation. The word average is used because there are some men who are superior to method although they would be better with it. It is not so very rare for a complete error to be made in the side of the chest in which a tuberculous lesion is situated. To begin percussion on the diseased side may give a false standard and it is in avoiding this that inspection so often comes to our aid. As regards our knowledge of cardiac disease the writer feels that we would be much more efficient in diagnosis (as regards the essential state of function), prognosis, and treatment if we did not listen to a heart say for five years after graduation but obtained our knowledge from inspection, palpation, and percussion. Like

all sweeping statements there are exceptions to this but it is surprising, if the effort be made, how much can be determined without the use of the stethoscope. Certainly as regards treatment the indications are based better on the means of examination other than auscultation. The old direction, "Eyes first, hands next, ears last and least" is an excellent one to keep in mind.

In the recognition of one class of diseases inspection is particularly important. The reference is to the disturbances due to disorders of the glands of internal secretion. We are learning of the frequent occurrence of these cases and for many of them the first suggestion of the diagnosis must come through our eyes. There is no better example than the condition of status lymphaticus in adults to which special attention has been drawn recently by Haven Emerson.* Here is a clinical picture which once appreciated, seems to be frequently coming before our observation. I fancy that this is much like the common experience with a new phrase or word to which our attention is directed. We are always meeting it and we wonder how we failed to see it before. The eye has been trained to see it.

"The eye sees only what it is trained to see." This is a matter of daily example. The impression falls on the retinal eye but not on the cerebral eye. No instance of this impresses me more than to look up a busy railroad yard at night when the signal lamps are lighted. To me they are so many coloured lights, but little more. To the engineer they chart his course and every one carries a plain message. Yet the impression on his retina and mine is the same. Somewhat of the same is seen if one rides on a locomotive at night. The engineer picks up the signal lights ahead sooner than the passenger. This, of course, is partly due to his knowledge of where the lights are situated but greatly to his eye seeing what it is trained to see. Reverse the conditions and put the engineer in a hospital ward. He sees a sick man, recognizes that his breathing is laboured and distressed but nothing more; to the physician the whole condition is clear; he knows the signals along this track. How many eyes—yes, and skilled eyes, too—looked at the thorax and never saw the so-called Litten's sign or diaphragm phenomenon? Many of us look at it every day and fail to see it, even after we know about it. How often does the diagnosis of a thoracic aneurism go begging for want of a careful glance?

It is tempting here to digress for a moment to refer to two neces-

* *Archives of Internal Medicine*, 1914, XIII., 169.

sary preliminaries before inspection can be thorough. These are sufficient light and the exposure of the part to be seen. We would not try to take ordinary photographs without sufficient light yet we constantly try to take the more important visual and mental ones without it. Then as to the second matter, the exposure of the part to be inspected, it seems absurd to dwell on it did not experience prove the contrary. How many chests are examined through the clothing or with the shirt tucked up and important points missed? The effect of this slackness in examinations for life insurance has been emphasized by Greene,* especially as regards tuberculosis and cardiac disease. It is as sensible to try to read the contents of a book through the cover as to hope to inspect when the area is not exposed.

How can a man train his powers of observation? By use, may be answered, but this is not everything. Use may be careless and lead to deterioration rather than to improvement. It must be a use which involves proper method and thoroughness. For some of us the training which was given to Kim in Kipling's story of that name may be helpful. He was trained for work in the secret service in India and at one stage under Lurgan Sahib he was allowed to look for a minute at a tray which contained various objects. It was then covered and he was required to detail what was on the tray. To Kim's enquiry as to how another had attained greater accuracy than himself in doing this, the answer was, "By doing it many times over till it is done perfectly—for it is worth doing." We might all carry this around as a daily reminder.

Daily life offers many chances of practice. How careful a description can you give of the personal appearance, clothing, etc., of the last patient who consulted you? If he had been a thief who walked off with something from your office could you give the police a description which would help them to capture him? The people we meet on the street, those in the street cars, all with whom we come in contact may serve as subjects. It may be objected that this is unnecessary and tiresome, perhaps using up mental energy on things of no special importance. But nothing which trains the powers of observation can be unimportant, and far from being tiresome it adds to the interest of the day. "Strive to be one of those upon whom nothing is lost," said a wise teacher. To endeavour to make out as much as possible about those about us from observation alone is an interesting study. Besides it is using

* *Modern Medicine*, first edition, Vol. VI., p. 758.

a part of our mental equipment which some of us leave unused. It demands observation and reflection. We remember the bewilderment of Watson when Sherlock Holmes made what seemed to be marvellous statements about his doings, and his surprise at the apparent simplicity of the methods.

But with this outside training—if it may be so called—must go the steady day by day observation of our patients, and with this there must be an honest reckoning of our mistakes. No part of the training is more essential. We all know the man who has made an incorrect diagnosis, but who, before the operation or post mortem is over, has nearly convinced himself that he did make the correct diagnosis and before night is quite sure of it. For him no good has come from the lesson. To learn we must face the mistakes and try to find out why we made them. Then comes our gain. In this connexion is an excellent saying, "It is easy to be wise after the event, but very difficult to be wiser," which can be illustrated by an example. A patient dies in whom you have made a diagnosis of typhoid fever, and at autopsy miliary tuberculosis is found. You are *wise* after the event but the laboratory *Diener* or a first year student is just as wise as you. To be *wiser*, or in other words to lessen the chance of your making the same mistake again, is quite another matter. You will certainly be no wiser if you have persuaded yourself that after all you did think it was miliary tuberculosis. For one's own training it is better to make an incorrect diagnosis than none at all—if you call yourself to account afterwards.

The second part of my subject—the inferences to be drawn from the observations—is a very different matter. Here the possibilities of error are much greater and what seems a simple diagnosis may involve complex inferences. A frequent mistake is to fail to recognize that there is any question of inference and to think that physical signs give a diagnosis directly. Take for instance the combination of diminished expansion of one side of the thorax, increased vocal fremitus, dulness and tubular breathing. We may say that we observe lobar pneumonia but we do not—that is only an inference which may be wrong.

No one can give rules for methods of thinking but it is possible to carry certain principles into operation. One is to strive to be delivered from hasty judgments. "Men see a little, presume a good deal, and so jump to the conclusion." How common this is needs only a little study of our mental processes. In some this is a habit, in others a fault of education. Take for instance the men

for whom the hearing of crepitant râles has only one meaning—pneumonia; not uncommonly the same man never grants the presence of pneumonia in the absence of such râles. Another point is to endeavour to cultivate the habit of orderly thinking exactly as of orderly examination. This should be within the power of the majority and is worth every effort. As a rule it is possible in a problem of diagnosis to state all the possibilities and by exclusion narrow them down to one, possibly to two or more. In the latter event it becomes a matter of deciding as to probabilities and even if we do not decide properly, at any rate we know the problem and are better able to know subsequently why we erred if we go wrong. Otherwise it is usually a more or less haphazard process of guess work. The assembling of possibilities and excluding one after another has all the delights of an intellectual game. Sometimes we are saved from error by our lack of knowledge of the finer points of the game. I well remember a fellow house-officer and myself being much interested in the diagnosis of an obscure abdominal condition. We went over it from every side and to the best of our ability, coming at last to a diagnosis. The attending physician was much interested and examined the patient very carefully, at last making a diagnosis which had never even occurred to us to consider. He suggested a rare condition which neither of us had ever seen but we felt that consideration of it should not have escaped us. We were in a very humble frame of mind until the operation showed that our diagnosis had been right. It was so principally because the rare condition had not come to our minds. The moral of this is not that ignorance is an advantage. But some of us are too much attracted by the thought of rare things and forget the law of averages in diagnosis. There is a man who is very proud of having diagnosed a rare abdominal disease on several occasions. But as for some years he made this diagnosis in every obscure abdominal condition, of course being nearly always wrong, one cannot feel that he deserves much credit.

You may say, and properly so, that this address has dealt with simple things. But it is the simple things which require to be kept constantly before us and which must form the foundation of our diagnostic ability. I feel very strongly that it is the duty of teachers of medicine to insist on their students learning the simple clinical methods thoroughly and to impress them with the view that nothing can take the place of our own powers of investigation. The advances on the laboratory side and the perfection of instruments have added much to our powers of diagnosis, but they have given some

men the idea that they are everything and the use of one's eyes and hands is looked on as old-fashioned. The man whose first idea in an obscure thoracic case is to have an *x-ray* plate taken and who cannot "bother" with physical signs does not deserve the name diagnostician. The safety with which the abdomen can be opened has led many men to neglect the principles of abdominal diagnosis for the short cut of an abdominal exploration. Many men are not willing to make the effort to arrive at a diagnosis by more laborious methods. Two examples of this are in my wards at this time; one man has had three abdominal sections in the effort to discover the source of his abdominal pain which a thorough physical examination would have shown to be a spondylitis with referred pains; the other has tabes with severe gastric crises, and his abdomen was opened by a surgeon who made the statement that a laparotomy was the quickest way to make a diagnosis. It was not in this case. To my mind accurate habits of working and thinking are a great safeguard against these supposed short cuts to diagnosis.

It is easy to criticize and point out the faults of others. The more we study our own errors the more sympathy we have for the mistakes of others. We should all have the desire to reduce our errors to the minimum and to eliminate entirely those due to careless observations and slovenly habits of thinking.

To observe accurately, to reason clearly, to hold ourselves to as high a standard of efficiency as our equipment permits, are within the powers of all. The development of these depends on the man himself, and in this we may all be aided by a study and imitation of the methods of Zsigmondy.

THE TREATMENT OF PUERPERAL INFECTIONS

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IF we study the subject of treatment of puerperal infection from an historical point of view we are struck with one fact, namely, that the tendency is to pass from the more heroic forms of attack to the milder forms of treatment. There has been a gradual slow change from sharp curette to dull instruments, later a slow substitution of digital removal for the instrumental cleaning, and lastly the abandoning of the manual invasion for the douche cleansing method, and to-day that conservative tendency is making itself still further felt in a policy of total abstention from interference. The pendulum often swings too far in its search for the proper level and it is our duty to help by our experience to bring it to its level as soon as possible.

In order to facilitate the treatment of the subject of puerperal infections it will be found advantageous to deal with the cases from two standpoints, firstly, cases which immediately after delivery present complications which are supposed strongly to predispose to infections, namely, cases of retained membranes or placental portions and secondly, cases which are already infected, therefore several days *post partem*. The treatment in the first group we may speak of as preventive, for want of a better term, that of the second group as curative.

Let me first place a hypothetical case of the first group before you and then discuss its treatment: A woman has just been delivered of her child at full term. The placenta comes away leaving all or part of the membranes within the uterine cavity; hæmorrhage negligible. There is probably no subject which has given rise to such bitter controversy or a more fruitful subject of polemical writings than which arises out of such a case. To-day Paris, which I consider the obstetrical Mecca, is divided into two hostile camps. The one contends that the membranes should be removed immediately by curette or finger, the other that the uterus should

be left alone for twenty-four hours and then the membranes removed with the *couvillon*, a type of brush such as is used in bottle-washing. The conservative treatment of to-day differs very widely from either of these schools. We do not hesitate to state that we never interfere for retained membranes. From this statement we do not wish you to infer that whether or not the membranes come away with the placenta is a matter of indifference to us. We must recognize the fact that such functionless tissues are a source of danger to the patient, but it is our object to minimize that danger. The real question is not whether we should interfere and remove these products, but whether the dangers of interference are not greater than those of a policy of *laissez-aller*. My experience leaves no doubt in my mind that the proper course to adopt is to refrain from any form of treatment which entails invasion of the uterine cavity. You may ask what will happen to the membranes. They may be cast off *en masse* a few hours after delivery, or they may never be seen, but come away as small, partly digested white flakes. The involution is seldom retarded by their presence, nor is hæmorrhage a pronounced symptom. My treatment consists in sitting the patient up in bed, removing all vulvar pads and perineal binders, placing the patient on a sterile pique, and administering continued small doses of combined ergot and strychnine, or repeated small doses of pituitrin. An ice cap to the fundus is often of great service. Let me quote a few very recent cases:

CASE 1.—A threatened eclamptic, weight 196 pounds; twin pregnancy; delivery by version of second child. One placenta and its membranes came away, but the other placenta rimmed and all its membranes remained behind. Recovery uneventful, except that involution was slower than normal. This may have been due to her eclamptic toxæmia. No trace of the membranes with lochia.

CASE 2.—Young woman, child 10½ pounds, piece of membranes size of adult hand missing. Hæmorrhage negligible; treatment as outlined above. Membranes came away *in toto* four hours after delivery.

CASE 3.—Primipara with gonorrhœa and numerous chancroids of the vulva; inguinal adenitis. Her employer telephoned me about this maid and without having seen her I sent her to the Maternity. The superintendent telephoned me that her condition was serious and would I come over at once, for he was in doubt as to whether she should be admitted into the hospital in that state. The vulva was swollen enormously, the large ulcerating chancroids were covered with a grey membrane, and a thick fetid greenish

discharge issued from the vagina. I immediately sent her to my ward at the Victoria where, under treatment, the condition cleared up in about twelve days. She then went into labour. It was slow with irregular pains over forty-eight hours. When the membranes were ruptured the amniotic fluid was infected and fetid. The child was born with a purulent vaginal discharge. The placenta came away with total absence of all the membranes. The appropriate treatment was instituted. The uterus involuted more rapidly than usual and she left the hospital on the twelfth day.

CASE 4.—Primipara brought to hospital in labour, temperature for three days of 101° to 103° . She gave birth to a dead macerated child a few hours afterwards. Membranes retained complete. Temperature became normal on the fifth day and no trace of the membranes was seen.

I could multiply such cases, but enough has been given to illustrate my course of action with its results. What is the subsequent course of such cases? So far I have seen no after-effects that would induce me to alter my plan of campaign, nor have I any regrets. There is no tendency to subinvolution as was formerly so warmly contended.

If we pass now to the second hypothetical case we come closer to our difficulties. A woman has just been delivered. The placenta comes away torn; a portion remains *in utero* with or without membranes. What is our present form of treatment? Here is a subject which, in sporting terms, will "get a rise out of" most men. Still the plan is one of masterful inactivity and the treatment is the same as in the above-cited cases, with this one exception, that though in practically all cases of retained membranes the hæmorrhage is quite negligible, it is not always so in retention of a portion of placenta. The presence or absence of this one symptom—hæmorrhage—should be the factor in determining interference or non-interference, respectively. This certainly will appeal to most as simplicity itself, but it is so only at first sight. If hæmorrhage is a feature, we have to bear in mind that we are dealing with non-infected cases, and the removal can be carried out with impunity or not, just in proportion to the degree of correctness of our aseptic technique and the general state of the patient at the time.

Broadly speaking, we should elect to remove immediately where there is hæmorrhage and the patient's condition is good. On the other hand, we should stand fast for immediate packing if circumstances are not favourable to removal. Whether or not we

will so remove the placental portion after removal of the packing in twenty-four hours will depend again upon the presence or absence of hæmorrhage. The great determining factor must be the patient's general condition, Has she been exhausted by the labour? Is the heart's action rapid, and has she been weakened by hæmorrhage? These are factors which must be placed in the balance to decide whether we will remove or whether we must merely pack the uterine cavity. Let me here quote a few cases:

CASE 5.—Twin pregnancies; portion of second placenta, a piece seemingly the size of a hen's egg, retained; hæmorrhage brisk. Patient very weak after long labour. Packed uterine cavity solidly with gauze and administered pituitrin. Hæmorrhage checked. Removed packing in twenty-four hours. Placental mass expelled with clot a few hours later, uneventful recovery.

CASE 6.—Multipara, seen in consultation, a cotyledon of placenta missing. Hæmorrhage negligible. Non-interference. Mass came away within twenty-four hours with considerable clot.

CASE 7.—Seen in consultation. Her physician delivered shoulder presentation by version. Retained placenta with hæmorrhage. Patient exhausted, he decided to pack the uterus. Stimulated patient, gave her plenty of fluids, and in twenty-four hours gave her an anæsthetic and removed the packing and placenta manually. The latter came away piecemeal and he states definitely that he did not get all away. She ran a temperature of 102°, pulse 140 for five days afterwards. He then called me in consultation to know whether he should curette to remove the balance of the placenta. I strongly advised against it. Hæmorrhage was practically nil. Uterus was large but firmly contracted. Temperature has slowly subsided and patient is making a smooth recovery.

So the plan of treatment is very simple. In cases immediately *post partum* we do not interfere for retained membranes, whether or not they are infected, and in cases of retention of portions of placental tissue our plan is one of masterful inactivity unless hæmorrhage enters as a marked feature. If hæmorrhage is abundant, we elect either to remove the placental remains or pack the uterus, and the general state of the patient will determine the one or the other.

The second group of cases constitute the real vital subjects of interest, namely those all too common cases where infection makes itself manifest after the third day *post partum*. The hypothetical case is as follows:

Multipara, delivered four days ago, membranes and placenta

came away complete. Chill and fever on third day, uterus large and tender, cervix soft and patulous, lochia ceased with onset of infection. Grey membrane over cervix and perineal tear. Or let us suppose that the membranes were incomplete and a portion of the placenta retained, but that in other respects this case is similar to the former. Hæmorrhage is a negligible quantity. Note that in the first case there is nothing retained and in the second there is definite retention of secundines.

I will not exaggerate when I state that not more than a year ago we took it without question that when such a case was brought to the hospital, it demanded active surgical interference. In the confusion which filled our minds, infection almost implied retention of products of conception, and almost every case was submitted to anæsthesia and exploration where there was any doubt on the subject, and even where there was no doubt. Only those cases escaped which showed signs of extra-uterine involvement. There are, even to-day, some of the greatest authorities who adhere to this plan of treatment. In my own experience, two years ago such a case presenting a large soft uterus, and particularly a patulous os, was a fit subject for the operating table.

These signs, namely, the large boggy uterus and the patulous soft cervix, were indications of retained products which must be removed, and the sooner the better. With what a toll we have learned our lesson! How many of these cases have we not explored only to find blood clot and perhaps a morsel of placenta or of membranes to justify our procedure, and how often, too, have we not seen the case greatly aggravated by this so-called harmless digital exploration and still less harmful intra-uterine douche! This is a time when we can stand on the white sheet of repentance and confess our mistakes. We all know that the large, tender, boggy uterus is not the result of retained products, but merely the expression of an acute infective process. I can only too readily recall the many cases in which not only a marked aggravation of the disease, but also an exitus rapidly followed this so-called innocent surgical procedure. By a gradual process we have learned the infinitely better results of a symptomatic and sustaining treatment. To-day the condition of the uterus and of the cervix plays no part in the course of the treatment. We do not interfere even though we know that there are infected products inside. And in this we are following along rational surgical lines. I care not what the condition of the uterus may be, provided there is proper drainage. Who of you would curette an acutely inflamed wound? It used

to be done, and how frequently have we not seen a local infection thereby converted into a general septicæmia.

Yet men to-day at the top of their profession, authorities of international repute, still advocate it. Are there any among you who in the light of your present knowledge would wash out a pyothorax or an abscess cavity? No, you are content to relieve tension and establish drainage. We wish only to bring the same rational treatment to bear upon the septic uterus. Establish proper drainage, let nature separate the slough, and trust to the recuperative powers of your patient, maintained and strengthened by hygienic, dietetic, and static measures, and she will survive or succumb just in proportion to the strength of her resistance to the virulence of her infection.

We now look upon the placenta in such cases as a slough which will come away piecemeal or *en bloc* according to the case. The presence of the piece of placenta or membrane is not the cause, nor even the predisposing factor in the infection, but is merely an associated accidental occurrence. It is not the infection that lies within the placenta that is the menace to the patient, but it is the infection within her own uterine wall. We find that the presence of retained products, as stated above, is but an associated factor. In the vast majority of such cases, infection has been introduced by manipulation by unclean hands or by instruments, in a word, by improper technique. The placental tissue has not been a predisposing factor, nor is its presence a menace or an aggravation of severity of the infection. It is a striking fact that the vast majority of cases which have died from sepsis present at autopsy a completely clean uterine cavity. Let us look at the matter in quite another way. The percentage of cases of retained placental portions in all labours is relatively very small, variously estimated at 0·2 to 1 per cent., yet the number of puerperal infections in hospital practice is well over 5 per cent. Therefore in 4 to 4·8 per cent. of the infections placental retention did not enter as a factor in the production of that infection. Yet had there been retention in any of this large percentage it certainly would have been held as a cause and not as an accidental association.

The fact remains that they get well in spite of their placental retention, and in much larger numbers than when surgery is called into effect. The curette, invented by Ohlshausen, became almost at once the cure for all intra-uterine pathological conditions. The older schools curetted the uterus as a routine part of any and every gynæcological operation. To-day it is relatively seldom

used. Perhaps the pendulum has swung back too far, but certainly not so in puerperal cases. To my mind the curette in such cases cannot be too harshly condemned. To curette a septic uterus is about as logical as to curette the throat and tonsils in acute angina. Yet that was done and found its staunch advocates in its day, and if I can forecast, curettage of the septic uterus will be as frequently done as is curettage of the throat nowadays in acute infection. As the dangers of this procedure, with its appalling death roll became fully understood, a less drastic measure was called into wide vogue, namely the dull curette in order to cause less abrasion and denudation. The result of these forms of treatment was to open up millions of new avenues for the entry of infection and its dissemination at least throughout the uterine walls, if not throughout the whole system.

I was called to a city not many months past in consultation in a case of puerperal septicæmia. The doctor has had a good training and is far above the average. He told me that he had curetted his case thoroughly three times and that she had a lowering of temperature for a few hours after each curettage. This was the one justification for his *modus operandi*, but I am convinced that he converted what would have been a mild local infection into a general septicæmia, and when I saw her she was beyond hope. Such treatment you will think worthy of the highest condemnation, yet there are hundreds to-day who would use and are using the curette, perhaps not thrice upon the same case, but at least once. But fortunately many have abandoned the curette to use the finger. This is but a further step towards conservatism. It is looked upon as almost harmless. In my experience it has proved most hurtful, and as it is generally followed by an intra-uterine douche, its baneful results are increased. You cannot explore with the finger the recently parturient uterus without inflicting a great deal of traumatism. I defy any surgeon or gynæcologist to explore the uterus with the finger, and particularly to remove placental tissue, without using a great deal of force, both over the fundus and *per vaginam*, in order to bring all parts of the uterine cavity into contact with the examining finger. What is the result? The procedure is followed by recovery without fever or by a severe chill after which the temperature falls to normal, or there may be a chill followed by all the signs of general infection with or without recovery. What has been accomplished? It will well repay us to stop and analyze the subject a little. If recovery takes place after a digital removal without the manifestation of signs of sepsis such as fever and chills,

it simply means that the infection was confined to the endometrial surface, therefore an innocuous infection which the finger and the subsequent douche and packing removed. The procedure was unnecessary, for if left to nature she would have done the work with less danger to the patient.

If the patient has had but a low temperature and slow pulse prior to exploration and immediately afterwards has a chill with subsequent return to the normal, the infection was a low grade one which did not cause the patient to react, the manipulation of the uterus threw a large amount of toxins or vaccines and living organisms into her system, and her reactive powers rose to meet the infection. But we cannot estimate the nature nor the virulence of the organism, and a large percentage of our cases will not be able to bear the burden of this surcharge of organisms and the local condition will become a fulminating septicæmia. We have no means at our disposal to determine the virulence of organisms. We have no means of knowing which case will recover and which will not recover after operation. Cultures help us very little if at all. The presence of saphrophytes with their characteristic odour is no proof of the innocuity of the infection. Such cases are always mixed infections. Therefore fetidity does not help us either. The hæmolysing properties of streptococci upon blood was thought to be a potent factor in determining their pathogenicity. But this has been abandoned by the best authorities as thoroughly impractical. I repeat we have no means at present of distinguishing between virulent infections which, if tampered with, will at once cause septicæmia with stormy convalescence or death, and other infections less virulent which are often cured by being stirred up.

Has it ever occurred to you how frequently these cases which have been explored digitally first develop chills and then lung involvement? Did it ever occur to you that, loosened by the manipulation of the uterus under anæsthesia and by the relaxation of the uterus under manipulation, small septic thrombi are set free and find lodgement in the lungs? Such really is the case. How much greater is the danger when there are already signs of thrombophlebitis! No one when such signs of thrombophlebitis are present would think of invading the uterus lest he should dislodge the thrombi. Why, then, invade the uterus where these symptoms and signs are not present but where the condition may be present nevertheless? We all know that there can be widespread thrombosis of the pelvic uterine veins and of the ovarian veins almost to the vena cava without any signs whatsoever. I have now under

study with Dr. Kaufmann the organs from twenty-two cases of puerperal infection. The extension of the disease as revealed by microscopical and macroscopical examination is always by one of three routes: first, by lymphatic extension in which we get a large tender uterus with the lymphatics (or small obliterated venous spaces, I cannot tell which) filled with leucocytes, œdema and a concomitant or secondary thrombophlebitis. The second type shows a smallish uterus with extensive involvement of the blood vessels of the uterine wall and broad ligament. The third type shows extension along the Fallopian tubes and secondary peritonitis. It is seldom except in the third class that thromboses do not occur and these are readily dislodged into the general circulation. There is not one of us who would be so imprudent as to handle a femoral thrombophlebitis, except with the greatest gentleness. We wrap it up in swaddling clothes to protect it from injury. Yet we deny this tender solicitude to the uterus and its vessels.

What has been said about curettage applies equally to less drastic, yet equally to-be-deprecated, tomponades and escarotics.

There is another important type of case which is complicated by hæmorrhage. The history runs about as follows: Delivery five days ago; fever and chill on third and fourth day; uterus large and tender, cervix soft and widely patulous, continued hæmorrhage from uterine cavity; marked anæmia due both to hæmorrhage and hæmolysis. History indefinite as to retained products.

Such cases come frequently under our care. Not many months ago every such case was immediately anæsthetized, the uterus explored, its cavity flushed out and packed with iodoform gauze. The rate of mortality proved high, chills not infrequently followed the operation, and the local condition either spread to the peritoneum or became a generalized septicæmia. In most of such cases one is struck with the small result of exploring the uterus. The cavity is generally found free from detritus. The hæmorrhage in most cases is not due to the retention of products of conception but merely the expression of that toxic hæmophilia which is so difficult to control. It is probable that most of these cases will die no matter what is done; but certain it is that, judging by the immediate and great aggravation of the symptoms following the interference, our treatment most decidedly did not help matters. In such cases owing to the greatly lessened coagulability of the blood, purpuric patches and mucous membrane hæmorrhages are common. In view of the fact that we cannot distinguish between these virulent infections in which hæmorrhage is but a symptom

of the grave toxæmia and those cases associated with hæmorrhage due to retention of products, we have adopted the plan of gently drawing down the cervix and packing the uterus with plain or iodoform gauze, leaving it in twenty-four hours and repeating if necessary. It is surprising, with experience, how little stirring up of the pelvic contents such a procedure entails, and the patient's general condition shows not the slightest shock. Let me outline a case or two which have recently occurred:

CASE 8.—Multipara, delivered ten days previous to being sent to hospital. Chills and pulse 140 or over. Uterus large, boggy and tender; cervix patulous; continued flow of thin dark blood from the uterus. Patient greatly anæmic. Uterus packed with gauze. Unable to control hæmorrhage. Debate as to whether normal blood serum would increase coagulability. Decided against owing to its inertness in infected cases. Finally anæsthetic. Explored gently with finger. Uterus found empty, packed with gauze. Blood from median basilic vein very fluid and of dirty blackish watery colour. Death eight hours after operation.

CASE 9.—Eight days *post partum* came to Samaritan Hospital; fever developed on fourth day; hæmorrhage not alarming but continuous. Patient very toxic, pulse 140. Blood cultures showed streptococci. Packed uterus with gauze without anæsthesia. Removed gauze in twenty four hours; with it came clots and quite a piece of necrotic placental tissue. Slow recovery without further local treatment.

From the outline of these cases it will be seen that our methods are again strongly conservative. Hæmorrhage is the one symptom that will force us to invade the infected uterus. When such invasion is decided upon we adopt the method that will provoke the least possible local disturbance, in order to keep the infection localized to the pelvis and, if possible, to the uterine muscular walls, which after all offer a great barrier to the spread of infections. Once the disease has passed this barrier there is no limit to its possibilities.

There is another type of case that must arrest our attention, a type of case in which it has become quite the fashion to use intra-uterine medicated douches. Let me outline such a history: Four days *post partum*, fever with or without chills; copious, fetid, *café-au-lait*-coloured lochia containing a large amount of mucus.

In such cases it is exceptional not to find the intra-uterine douche used. These are the so-called saprophytic cases. I have seen, I am quite sure, not less than thirty such cases in the last

six months. The effect produced by such a lavage is supposed to be twofold, the cleansing effect of the water and the bactericidal effect of the drug. The former effect is as inefficacious as the latter. Anyone who knows the veriest elements of pathology must realize that the danger lies not in what remains in the uterine cavity but what lies deeper. The mere washing of an abscess cavity does not help the healing. It is generally conceded by surgeons that it only bathes the surface, does not reach the vital spots, liquefies the toxins and promotes absorption of these. Here also if the organism is merely on the surface, it is, therefore, saprophytic and not to be dreaded, and with proper drainage will be readily overcome. I cannot help comparing the lavage treatment of the uterus to the treatment of general peritonitis which was generally in vogue a few years ago. It is well within the recollection of every one when it was thought the duty of the surgeon to eviscerate, wash with saline all the intestines, and wipe off the plaques of lymph—the very safeguards of nature. The result was the same as in puerperal infections, increased absorption of bacteria and toxins, chills, and sometimes death. We obstetricians are learning our lesson, slowly, long after the surgeons have shown us the way. At the present day in cases of peritonitis we are content to relieve tension and let nature do the rest. So we think it should be with the infected uterus: promote drainage and let nature take care of the infection.

Moreover, the intra-uterine douche is not the innocuous thing it was supposed. I have collected from the literature no less than sixteen cases of chemical peritonitis following upon intra-uterine douches. It may be thought that in these cases there must have been uterine rupture and undue force used. Not at all. My eyes have been opened recently to the great ease with which fluid can be forced from the uterine cavity into the peritoneum. This was first brought to my notice by the frequency with which free watery blood was found in the peritoneal cavity after curettage. In not a few cases I have been astounded at the amount and have examined the uterus for evidence of puncture. This was never found. But the condition was readily explained when, later, Dr. Chipman began to inject a strong solution of iodine into the uterus in carcinoma cases in order to kill out the malignant cells and prevent their contaminating the field of operation. It was then found that though a minimum of force was used, invariably the pelvic peritoneum was deeply stained and contained fluid iodine in variable quantity.

To demonstrate the great patulousness of the tubes I will report the following case in detail:

CASE 10.—A child two days old, with bowel obstruction, was given castor oil. On night of second day I was called in consultation. Abdomen markedly distended, dark liquid blood flowing in spurts from the vagina, and a sausage-shaped mass felt per rectum at the brim of the pelvis. Operation revealed congenital atresia of the sigmoid at two spots, with a thin pouch of intestine intervening. The lower atresia was complete, the upper incomplete, and rupture of the bowel between the constrictions had taken place. The abdomen was full of blood and meconium. At autopsy four hours later the abdominal blood was seen evacuating itself *per vias genitales*.

This to me was no little surprise and has led to the following experiments: I have injected methylene blue into the uterine cavity at autopsy with douche-can and canula, imitating as closely as possible the technique of operative work, and I have found that with a pressure of only two feet of elevation, in some cases eighteen inches, and with a temporary obstruction to the outflow, such as frequently occurs with clots and fragments of tissue, I can force fluid into the peritoneal cavity through the Fallopian tubes. I repeat, only two feet of elevation of the douche was necessary. Hence the frequency of chemical peritonitis, not to speak of septic peritoneal contamination.

If we now turn our attention to the bactericidal power of these therapeutic douches we can dispatch the matter in a moment when authors have proved that a solution of 1 in 1000 bichloride in contact for ten minutes *in vitro* with streptococci has not a lethal effect upon them, and that the same strength of solution in contact for half an hour with the surface of tissues penetrates but one-tenth of a millimetre, and who would dare to use 1 in 5000, not to speak of 1 in 1000, bichloride in the uterus?

There is still another form of treatment which deserves recognition, namely, the different forms of serum, antibodies, and vaccines.

First in point of time as well as of importance comes the anti-streptococcus serum. Have the results justified its use? I am sorry to state that after a prolonged and conscientious trial of this preparation, appealing to me as it does, as being both logical and scientific, I have had to abandon its use completely. It is still commonly used in grave, almost hopeless, cases merely because we seem so utterly helpless under such circumstances. Not infrequently a fall of temperature by crisis, or a slow bettering of the patient's

condition, is attributed to the serum when probably the therapeutic effect of the dose had nothing to do with the change. Serum treatment is not without its dangers, into which I cannot enter here. Moreover, the only logical way to employ it is to find the nature of the organism causing the disease. This was done in all our cases. But even when the disease is caused by the streptococcus it is not surprising that the serum does not act, for we know that there are certainly as many varieties of streptococci as there are strains of colon bacilli; and if we examine more closely we will probably find that there are as many strains of organisms as there are individuals infected. To overcome this the polyvalent serum has been introduced, but the results have not been encouraging, and it savours too much of the blunderbuss dose to find favour.

Do vaccines find any place in the treatment of puerperal fevers? It is unfortunate that in the nature of things their use should be very limited. They have no place in the acute infections where the patient is reacting to the full extent of her powers of resistance. To give such a patient vaccines would be doing her grave injury, and may be just the quantity to overload her system and cause death. We must not forget that in using vaccines we are injecting not an antibody but the very poisons against which the patient is already battling for her life. Vaccine therapy fails us where we most need it, namely in the very acute severe infections. They may and do help us in the subacute and protracted cases of infection.

The intravenous injections of such solutions as collargol, magnesium sulphate and such like preparations have never appealed to me and my personal experience is almost nil.

There remains but one form of puerperal infection to describe—the intraperitoneal type, gonorrhœal and tuberculous. But both these infections are of the nature of peritoneal involvement secondary to tubo-ovarian disease, they hardly come within the scope of this paper.

In conclusion, and in order to crystallize what has gone before, I take the liberty of outlining a very recent case, which carries with it the treatment which we at present adopt:

CASE 11.—A multipara, suffering from acute cholecystitis with fever and severe abdominal and epigastric pains. After five days of local and general treatment the temperature became normal with slow disappearance of all the symptoms. She was eight months pregnant. On the second day of normal temperature she miscarried. Dr. P., who was attending the case, could not be

found and Dr. R. was called. No remarks about the placenta or membranes. Internal examinations without gloves were made. On the third day chill and fever, 103.3° . I was called in consultation by Dr. P. three days later. I found a subsiding cholecystitis, tenderness over the lower abdomen, a perineal tear covered with a grey streptococcic membrane, and the cervix similarly involved. There was fixation of the lower uterine segment. The os was patulous and a piece of placenta the size of a hen's egg could be felt beyond the internal os. The patient was extremely weak, very anæmic, with pulse always over 130. She looked very toxic. The lochia were not fetid.

Treatment: Drainage was promoted by setting the patient up in bed. For such cases there is nothing so comfortable as the Gatch bed. Cleansing vaginal douches were used under very low pressure. Vulvar pads were removed, and an ice-cap, well protected, was placed on the hypogastrium. If possible, open air treatment or, failing this, free ventilation was recommended. Patient was encouraged to drink water in enormous quantities, and a sustaining and nutritious liquid diet was ordered. Sponging, if temperature should rise above 103° . Ice-cap to the head if headache proved severe or if delirium should supervene. Purgation to be avoided, I cannot overemphasize the effect of encouraging the patient to drink large quantities of water. Stimulants are used if necessary, and everything is done to promote the patient's comfort and to induce sleep.

Such was the course adopted. Three days later the placental tissue came away and in three days more the temperature reached normal and convalescence was uninterrupted. Had hæmorrhage come on I would have advised packing, and, if necessary, repacking.

Such is our line of treatment. Our recoveries have been greatly increased by it. We have come to it through a long series of sad experiences. We admit that as gynæcologists and obstetricians we have learned our lesson slowly. The surgeons have taught us the way, but we were slow to follow. I do not hold out for this line of treatment that we can save all cases. Some of these infections are so virulent and the resistance so low that the flooding of the system seems virtually to paralyze the human body, and between this extreme and the other extreme of mere saprophytic invasion of the uterine cavity there are all grades. We are earnest in our search for enlightenment and we advocate a line of treatment which, though some of you may think it errs on the side of too great conservatism, at least has the merit, it must be admitted, of being

easily put into effect and carries with it the minimum of possibility for harm. For my part, other things being equal, I much prefer to treat a case that has not had surgical interference of any kind, and I feel conscientiously certain that the recoveries will be smoother and more frequent.

The question of the treatment of puerperal infection has been awakened to new activity, and is being widely discussed throughout America. The general tendency of those in authority is towards conservatism. Some are radical in their conservatism, others are merely conservative. I only ask that the treatment be based upon sound surgical principles, and I feel sure that we will not stray far from the right path. The French schools are fond of placards announcing scientific truths in their lecture rooms and wards. My placard for puerperal septic cases would be *Noli me tangere*.

THE DIAGNOSIS OF SUBTENTORIAL TUMOURS

WITH A REPORT OF FOUR CASES

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THE study of the diagnosis of subtentorial growths resolves itself into three distinct divisions, namely, in the first place, the determination of the anatomical site of the subtentorial lesion—and I refer here to the three positions, namely, cerebellar, extra-cerebellar (between the cerebellum and occipital bone), and lastly, the pontine; while it is necessary also definitely to separate such lesions from those due to disease above the tentorium. In the second place one must differentiate the various morbid conditions which occur in these regions, namely, tumour, abscess, vascular thrombosis and hemorrhage, labyrinthine disease, meningitis, sclerosis and atrophy, and, finally, uræmic manifestations. Thirdly, the nature of the new growth. Is it syphilitic, tubercular, hydatid, or one of the manifold types of neoplasm?

The disturbances of function which are characteristic of subtentorial growths may be divided, in order that we may come to a decision as to the anatomical site, into eight divisions, namely: (1) general signs of increased intracranial pressure; (2) cerebellar and cerebellar tract signs; (3) brain stem nuclei and nerve signs; (4) motor, and (5) sensory tract signs; (6) affections of the bladder and rectum; (7) reflexes, and (8) signs of increased ventricular pressure.

The first cardinal sign is headache. This is usually an early sign in cerebellar and extra-cerebellar tumours, but usually late in pontine and medullary growths. It is most characteristic if it is felt at the back of the head, but is very frequently complained of in the frontal region, and while it may occur in both, yet its maximum may be frontal rather than occipital. Again, one may mistake neuralgia over the fifth nerve for a true headache. In supra-

tentorial growths, occipital headache is not the rule, but may occur, while we must note with the greatest care that if the basal tumour causes pressure on the fourth ventricle, it may lead to great dilatation of the lateral ventricles, which may cause a complaint of great internal pressure and occasionally a sensation burning in character.

The second cardinal sign is optic neuritis. Now in cerebellar this is frequently early and intense, and the same statement applies to extra-cerebellar growths, while in pontine it is frequently late in appearance. But it may be absent, in fact in Paton's series it was not seen in 26 per cent. of extra-cerebellar growths nor in 48 per cent. of pontine, and yet, strange to say, the actual degree of swelling of the disc was greater in the pontine than in the other two. In supratentorial growths all degrees of optic neuritis occur.

The third sign, vomiting, is usually present in cerebellar and extra-cerebellar growths, and yet it may be absent for months at a time and then recur. In pontine it is usually less severe, while in supratentorial growths it is like the other general signs, variable.

Leaving aside that form of true vertigo in which objects appear to move from side to side, or in which the patient feels that he is moving from one to the other side—a symptom which is probably due to interference with the semi-circular canals or their connexion *via* the pons to the mid-brain, and considering only the sensation of general giddiness due to increased intra-cranial pressure, one may simply state it is frequent in all subtentorial conditions.

In examining the signs due to cerebellar involvement, it is necessary to note that the cerebellum is connected by its peduncles with the spinal cord and with the pons, both of which are afferent and efferent to the cerebellum, while by its superior peduncle it is mainly efferent to the nucleus centres of the mid-brain, to the red nucleus, optic thalamus and cortex. But physiologically it is in all probability the great centre for tone, and it apparently acts in three distinct ways: it receives as a sensory centre the sensation of tone from all parts of the motor mechanism; it supplies a constant amount of tone to the motor mechanism at rest; and in correlation with cerebral and cortical action, it supplies the necessary tone for prolonging contraction, when an action is performed.

Naturally, three classes of symptoms may arise in cerebellar diseases. First, those due to loss of tonic afferent stimuli, and in this case the cerebral action may be excessive, since no knowledge of the necessary amount of tone to be exercised is obtainable; secondly, those due to loss of tonic and of efferent stimuli at rest, resulting

in a general atonia and asthenia of motor structures; and thirdly, those due to loss of tonic efferent stimuli when cortical motor action is performed, leading to tremulous movement, dependent on the absence of constant tonic stimulation which should be supplied by the cerebellum.

Considering, therefore, the disturbances due to interference with the cerebellum by tumours, one may outline them under the above mentioned headings.

(a) Disturbances due to excessive cerebral action owing to the absence of cerebellar afferent stimuli.

Asynergy.—This sign is not often present, but is characterized by the difficulty in performing movements of groups of muscles usually associated together. The cortical cells find it impossible to associate a proper degree of tone for each group of muscles, and therefore, simple movements which should be combined together are each performed separately.

Adiadococinesia.—This is usually tested by rapid pronation and supination of the forearms, and when there is cerebellar defect one expects to find a diminution in the ability with which it is performed on one or both sides, it is a valuable sign if one-sided cerebellar disease is present. It depends on the fact that the cortex is unable to change rapidly from one simple movement to another, owing, perhaps, to a difficulty resulting from a lack of knowledge of the proper tone to be supplied for the action.

Cerebellar catalepsy.—This is tested by the patient lying on the back and elevating the legs flexed at the knees. In this case while tremor may occur before they reach this position, when once they are held there, in cerebellar disease there is more than usual ability to keep them firmly in such position.

Loss of power of measured movements.—The patient in writing or in pointing out an object advances either the pen or the finger to a degree beyond that required. This, again, is probably due to uncontrolled action of the cortical centre.

(b) The next signs are cerebellar asthenia and hypotonia, and these are of great value if one side is only or principally affected, although the muscular power is strong and equal on both sides, one recognizes marked hypotonia or definite asthenia in the arm and leg of the side in which the cerebellar lesion is situated.

(c) The third group of signs is apparently dependent on the fact that a normal action of the cerebral motor cells and a continuous tonic supply from the cerebellum are necessary in order that the movement may be continuous and not intermittent. These cardinal

signs occur not only in cerebellar disease but in disease of the tracts from the cerebellum to the nuclei in the mid-brain, to the red nucleus and probably to the thalamus. In these cases a true intention tremor may occur, and if one-sided, will be on the side of the tumour. Nystagmus is probably due to the same cause, and is characteristically shown by being rapid on the side opposite to the tumour, and slow and jerky on the side of the tumour.

(d) There are certain signs due to the cerebellum being affected, in which probably not only the afferent but also the efferent defects bear definite influence. The gait in cerebellar disease is frequently highly characteristic, and yet varies in many different cases. On the one hand there may be a marked asynergic gait, in which the patient is unable to walk from the fact that he cannot perform the separate movements necessary in this action at the same time. On the other hand there may be marked titubation, the patient staggering from side to side with a tendency to fall, in some cases to the side of the tumour—probably due to a measure of atonia on that side. Again, in standing the patient may fall to one side from static ataxia. The head may show marked trembling and may be held over to one side, usually but not always having the occiput on the same side depressed towards the side of the tumour.

Now while these are typical signs of a diseased cerebellum, yet they may occur in extra-cerebellar tumours from the growth pressing into the lobe, and also in the same manner cerebellar signs may occasionally occur in pontine tumours. In the latter case the gait is more likely to be spastic, and yet in some cerebellar cases the gait may be slow and uncertain rather than asynergic or titubate.

As a general rule it may be laid down that complete paralysis of cranial nerves issuing from the subtentorial region is diagnostic of extra-cerebellar or pontine lesions, and that partial paralysis, while due to pressure from any of the three causes, cerebellar, extra cerebellar, or pontine, may yet be due to cross pressure from the opposite side or to displacement of the cerebellum itself.

The third and fourth nerves arise above the tentorium and yet, particularly with a displaced cerebellum, may be severely affected. They may be affected on both sides or on one, and may show loss of power of movement of the eyes and ptosis. Such is an extreme case; for instance that quoted by Spiller, where with a big extra-cerebellar tumour dislocating the cerebellum forwards there was on the left side ptosis and only movement of the eye downwards, and on the right side internal rectus weakness. In this case, despite the left cerebellar growth, nearly all the signs were right cerebellar,

namely, weakness of the right face and masseter muscle, while signs of pontine involvement showed in the affection of both lower limbs with extensor responses.

The fourth nerve may be affected by a tumour growing forwards through the tentorium and cause difficulty looking downwards.

Paresis or paralysis of the external rectus muscle, which is supplied by the sixth nerve, must be carefully distinguished from slow nystagmus. It is a one-sided condition, as the internal rectus of the other side will not usually be affected. Diplopia will be complained of on the affected side. In extra-cerebellar growth this is diagnostic and valuable, in pontine it also occurs, in intra-cerebellar rarely, and then due to pressure. In supratentorial tumours it may occur late from general pressure or from growth interrupting the nerve in its course to the muscle it supplies.

The fifth nerve may be affected in either its sensory or motor course. In extra-cerebellar tumours there may be disturbance or injury of either or both divisions with numbness over the face, or pain, and with weakness of the temporal, masseter and pterygoid muscles, so that on opening the jaw it drops to the healthy side. In pontine lesions the same condition occurs, while a double fifth may occur or a fifth with crossed paralysis, that is, with lesion of either nerves or motor sensory tracts on the other side of the body. In supratentorial growths, apart from general pressure, a fifth may be implicated, especially in its sensory branches in its course from the gasserian ganglion to the nerve exits from the skull.

The seventh is usually affected in all forms of tumour to some degree. Total facial paralysis occurs most usually in pontine and extra-cerebellar growths; it may occur on both sides in pontine and vermiform process tumours. Cerebellar tumours usually cause the upper neurone type of weakness, in which the lower part of the face is mainly or only affected. And yet one must note here that the pressure may be actually greater on the side opposite to the growth with weakness to the face on that side. Supratentorial growths, if situated near the motor areas or the motor paths leading from them, produce the upper neurone type of facial paralysis. General intra-ventricular pressure leads frequently to weakness in the facial muscles on one or both sides, having no relation to the tumours itself.

The eighth nerve is frequently affected in extra-cerebellar and pontine growths. You may look for early signs of both affection of hearing and of the equilibrium. Giddiness, due to affection of the nerve leading from the semicircular canals to their nuclei

in the pontine angle below the cerebellum, may occur. Noises in the ear may also occur, such as the sound of escaping air; but deafness is a cardinal sign of pontine or extra-cerebellar tumour. In cerebellar lesions there may be disturbances of hearing, usually partial and due to pressure; while in supratentorial lesions deafness may also occur, but in this case more usually due to counter pressure, to auditory neuritis, or to word deafness.

The ninth nerve is rarely affected in any but pontine tumours. However, cases are reported of extra-cerebellar tumours growing on the ninth nerve, in which taste on half the tongue was lost, and this was the first sign of the growth. It is interesting to note that in one case smell was lost also on the same side. In cerebellar tumours there is rarely affection of any of the nerves below the eighth, but yet pressure on these may occur, and the order of their frequency is ninth, tenth, eleventh, twelfth.

The vagus is principally of diagnostic value in its affection in connexion with pontine growths. Truly in extra-cerebellar there may be a weakness of the palate on the same side; in cerebellar still more rarely; in pontine this is much more characteristic. So with the vocal cords; their affection is practically diagnostic of the pontine lesion. General pressure, however, in all conditions, cerebellar, extra-cerebellar, and pontine, leads to vagus trouble with difficulty in swallowing, and in some cases death may occur from affection of the respiratory centre.

The spinal accessory may be affected in pontine growths, causing wasting of the sterno mastoid muscle on the diseased side, while the usual position of the head in cerebellar tumours may be regarded in some cases as due to irritation of this nerve, or more frequently as a sign of true cerebellar nature.

The twelfth nerve is frequently affected in pontine tumours, while in extra-cerebellar tumours it is most usually affected through direct pressure on the pyramidal tracts above the crossing; wasting of the tongue is strongly diagnostic of pontine growth. As to the affections of speech, one can realize that this function may be altered through several different conditions, for instance, through cerebellar ataxia, or through affection of the seventh, tenth, or twelfth nerves. A truly ataxic speech is most characteristic of intra-cerebellar disease and is seen most commonly perhaps in cerebellar sclerosis, while defects due to interference with the nerves are more common in pontine disease.

The condition of the motor power of the body, apart from that due to cerebellar disturbances in function, does not show any change

in a pure cerebellar case. In extra-cerebellar tumours there may be definite weakness of the opposite side, while in pontine lesions there may be definite bilateral or unilateral weakness, which frequently is of a definite spastic type.

Changes in sensation of touch, pain, and temperature on the side opposite to a tumour, when they are present, are very strongly diagnostic of a lesion in the pons, especially if it is disassociated. If it should occur in extra-cerebellar tumours its presence must point to extensions of the growth into the pons.

Bladder and rectum disturbances are characteristic of pontine disease, or of high intra-ventricular pressure with dilatation of the ventricles.

A further group of symptoms are those due to increased intra-ventricular pressure, and these are of two types, firstly local, where the increased pressure in the lateral ventricles gives rise to local signs such as upper neurone hemiplegia, hemianopia, and so on. Under general signs I include the various forms of convulsion. Firstly, attacks characterized by a sensation of marked weakness, described by the patients as a sensation of "giving way." Secondly, the cerebellar fits described by Hughlings Jackson, characterized by extension of the legs and the crossed arm type so well figured by him.

The value of the reflexes in the diagnosis of these three lesions is not great. In cerebellar tumours the reflexes are frequently diminished; they may, however, be increased, particularly if the pressure exhibited by the tumour is becoming great. In extra-cerebellar tumours a characteristic symptom would be increase of the reflexes on the side opposite to the tumour from pressure, with an extensor response on that side. In pontine tumours the presence of double extensor responses, with markedly increased reflexes and ankle clonus, is in favour of such a lesion.

The diagnosis of abscess from growth consists in the history of local septic processes, of more rapid onset, of temperature variations, with perhaps high white cell count. From local thrombosis and hæmorrhage, the diagnosis must rest on the onset and on associated vascular conditions, while the localized signs will be similar to those of tumour, yet the general signs of tumour will be absent. For meningitis, we have the onset, rapid course, more marked basal irritation, spinal puncture and blood count. From uræmia the diagnosis is made by the renal condition, the examination of the optic discs, signs of basal irritation without local paralysis, absence of cerebellar signs, and relief by lumbar puncture; and from laby-

rinthine disease by the aural examination, absence of optic neuritis, characteristic nystagmus, and so on.

The following four cases of subtentorial tumour have come under my care in the last three months, and, strange to say, have followed one another consecutively.

CASE 1. Tumour of the pons. F. B., age thirty-two. Four months before complained of double vision, followed by paralysis of the right side of the face, and two months ago of weakness of the right arm. In considering his general symptoms it is interesting to note that even at this late stage he complains of no headache, but at one time suffered from giddiness which entirely left him when vomiting started; this latter symptom is now of less note. Examination of the discs showed marked optic neuritis. In regard to his cerebellar symptoms there is neither asynergia, asthenia nor tremor made out. Examination in the third place of the cranial nerve signs shows paralysis of the motor fifth on the right side, and complete paralysis of the whole of the facial movements on the right side, due to affection of the seventh. No deafness is present, but there is weakness of the right palate. On examination of the motor power of the body there is spasticity and weakness of the left arm and leg, and also of the left sterno-mastoid muscle. The characteristic signs of pontine disease are added to by the fact that there is a feeling of numbness in the left side of the body, a heat sensation is felt as painful, while cold sensation is normally interpreted. There is no disturbance of the bladder. The reflexes on the right are normal, and the left are increased with left ankle clonus and plantar extensor.

CASE 2. F. T., age fourteen. Complains of headache for the last three years, but severe for the last three months; vomiting, staggering gait, discharge in the left ear. Three years ago, following scarlet fever, this boy developed ear discharge, but it stopped three months ago when his headache became severe. As to the general symptoms, the headache is felt in the frontal and occipital regions, vomiting is still present, at other times retching is more marked; optic neuritis is present in both eyes, the left greater than the right. The cerebellar signs are characteristic; there is hypotonus on the left side, but adiadocinesia is most marked on the right side, and on walking he falls to the right. There is no nystagmus and no tremor. The cranial nerve signs are absent. There is neither paralysis nor paresis of any of the cranial nerves. The reflexes of the knee are depressed, the plantar is extensor on the right. Lumbar puncture shows a cell count of 3, the blood count 7,000 whites. On account

of the fact that the boy had ear discharge in the left ear and that the cerebellar hypotonus was on the left side, and in spite of the fact that the other cerebellar signs pointed to the right side, it was decided to operate on the left cerebellar region by the mastoid route. No abscess was found. The patient developed respiratory failure while on the operating table. He was kept alive by artificial respiration for one day. The post-mortem examination showed a gliomatous cyst in the left cerebellum.

CASE 3. W. C., age twenty-three. Five years ago struck by a brick over the head. Two months ago had what he calls a sun-stroke; sensation of "giving way." He has developed the general signs of headache, which was felt in the frontal region radiating into the back of the head; vomiting occurred from time to time, and there has been considerable giddiness. Examination of the cerebellar symptoms shows very definite difficulty in pronation and in supination of the left arm; some staggering in walking, and he falls to the left side. Marked hypotonia of the whole of the left side. On examination of the cranial nerves one finds quick nystagmus to the right side, slow to the left; marked weakness in the masticators of the left side; weakness of the external rectus muscle of the left side; weakness of the whole of the left face. No affection is found of any nerve below this level; the reflexes are equal, and unaltered on both sides. Diagnosis is made of a left extra-cerebellar tumour pressing into the cerebellum. On the morning of the operation patient died suddenly from respiratory failure, a few hours before the time fixed to operate. Post-mortem examination revealed an extra-cerebellar tumour growing from the meninges and pressing into the left cerebellar lobe.

CASE 4. L. B., age twenty-nine. Six months ago, following on childbirth, felt weak and tired. Noticed dizziness as soon as she began to get out of bed following her confinement. Complained of difficulty in vision and vomiting before her breakfast for some two or three months. The general signs in the case are headache, which was felt on the right side behind but mainly over the temples; vomiting, which occurred for the first two months, but for the last two months had stopped; optic neuritis of severe degree, the right side greater than the left; dizziness of slight degree. Cerebellar signs. There appeared to be slight impediment of the power of pronation and supination of the left arm, but hardly sufficient to be diagnostic. She staggered on walking but to a very slight degree, the tendency to fall was to the right side. Examination showed slight weakness of the left external rectus, which had only

recently occurred and was thought to be probably, therefore, a late symptom, and of no value in diagnosis. The seventh nerve was normal. The eighth nerve showed noises and some degree of deafness in the right ear. The reflexes on both sides were equal and increased, plantar reflexes flexor. It was decided that the tumour lay in the right cerebellar region on account of the deafness and weakness over the right face, and because the patient staggered to the right; while the left weakness of the external rectus was thought to be due to late general pressure. Strange to say, the same result occurred as in the last case referred to. On the morning before the operation the patient was taken with respiratory paralysis and died, despite the assistance of artificial respiration. Post-mortem examination showed a tumour to be present in the left cerebellar region.

NICKEL-CHROMIUM WIRE FOR THE BACTERIOLOGICAL LABORATORY

BY H. M. LANCASTER, B.A.Sc.

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BACTERIOLOGISTS requiring large quantities of platinum wire for routine work in the laboratory, or for the use of student classes, will find nickel-chromium wire of some assistance. This alloy heats readily, and cools quickly, but is not rapidly disintegrated by repeated heating and cooling. A very useful instrument may be made from a three-inch length of No. 22 Brown and Sharpe gauge wire inserted in an eight-inch handle of three-sixteenth-inch aluminium rod. A firm junction between handle and wire may be secured by drilling a small hole slightly larger in diameter than the wire one-half inch deep into the end of the rod, inserting the wire, and, finally, hammering or pinching in a vice until the two are firmly joined. Wire of any other gauge may be used if desired.

Nickel-chromium wire in all gauges is supplied by any of the larger firms dealing in such alloys. It may be obtained from manufacturers of electrical supplies, as it is used under the trade name "Nichrome" as resistance wire in the heating elements of many modern heating devices. The cost of nickel-chromium is very small compared with that of platinum. At present prices, one foot of platinum wire, No. 22 gauge, at forty-five dollars per ounce, costs about three dollars; ten feet of No. 22 gauge nichrome, at four dollars and eighty-five cents per pound, cost about eight and one-half cents.

*Read before Laboratory Section, Canadian Medical Association, London, Ontario, August, 1913.

Case Reports

NERVE ANASTOMOSIS

G. C., age twenty-seven, came home five years ago from Flint with contractures, paralyses, etc., due to anterior poliomyelitis. He had also some accompanying anæsthesia of the skin of the foot and leg on the right, its distribution following closely the area supplied by the external popliteal nerve. Four years ago we operated, doing a tendon-switching operation and relieving the contractures so that he was enabled to walk. The right foot, however, was the cause of a lot of trouble, as it would be injured or frozen without the patient's knowledge. In March of this year at the Brantford General Hospital I operated again, cutting down through the popliteal space and dissecting out this space till the sciatic nerve and its divisions into external and internal popliteal were laid bare throughout. The external branch was less than half its usual size, but the internal was a large healthy nerve. Both branches were freshened and sutured with silk, side to side for one and a half to two inches. The united nerves were covered in by suturing over them the surrounding muscles and fat.

At present, two and a half months after operation, the feeling has returned throughout the entire anæsthetic area except one spot the size of a twenty-five cent piece immediately back of the web of the second toe. The trophic sores have healed and motion and use of the foot and leg is much better. A surprising feature of the case was that the return of the sensory function began four days after the operation, and was noted by the patient and by Dr. McCall, the house surgeon, at that time.

Brantford.

EVERETT S. HICKS

CHLOROMA

BY WILLIAM G. HEPBURN, M.D., C.M.

THIS communication is a study of a case of chloroma treated in Dr. G. G. Campbell's ward in the Montreal General Hospital.

Chloroma is the name applied to certain rare tumours, which are characterized by a green or greenish colour. The nature of the green colour has not been explained. These tumours are found invading the bone-marrow, the periosteum of the flat and long bones, the lungs, kidneys, liver, pancreas and other organs and tissues of the body. The symptoms of chloroma are those of acute leukæmia, namely, severe anæmia, weakness, and a tendency to hæmorrhages. There have been about one hundred cases reported, the majority in children, a few in adults, and a small number in infants. The course of the disease is very acute, usually from a few weeks to several months, one case having been reported as lasting one and a half years. Exophthalmos may be present, due to the presence of green tumours in the orbit. The blood picture presents a very high white cell count, even exceeding a million per cubic millimetre. Chloroma has formerly been considered to be due to tumours arising from lymphoid tissue, especially the spleen and lymph nodes, but recent work on this subject, as for example the article of Dr. A. M. Burgess, *Journal of Medical Research*, November, 1912, 133-155, shows that chloroma is a type of acute myelogenous leukæmia. The tumours are due to the myeloid cells invading normal tissues outside the blood stream and forming palpable masses.

The following case is of interest in illustrating this relation, as the ante-mortem diagnosis was acute lymphatic leukæmia:

E. R., male, fifty years old, a worker in a lime-kiln, entered the Montreal General Hospital April 24th, 1913, with a history of having been in poor health for some time previous to the onset of his acute illness, so that at intervals he had to discontinue his work. Four weeks prior to his admission he developed a dull aching pain in the left lower abdominal quadrant, which disappeared in eight days. His acute attack consisted of cough with sputum, weakness, loss of weight, sore mouth and throat, and dizziness. His habits

were regular. He had had twenty children born, of whom fifteen died in infancy.

He was a large, well developed man. His skin was of a greyish icteroid hue with purpuric spots on the arms and legs. The axillary, anterior cervical and inguinal glands were moderately enlarged and palpable. The tongue was soft and flabby, showing indentation of the teeth. The tonsils were hypertrophied with oedema of the uvula, the pharynx pale, and the right side of the fauces was injected with a hæmorrhagic area. The alveolar borders were spongy. The spleen was palpable three fingers' breadth below the costal border, measuring 20 x 12 cm. The day following admission, a blood count showed red cells, 2,400,000; white cells, 54,000; hæmoglobin, 38 per cent.; and a differential count of 503 white cells gave the following percentages: polymorphonuclears, 21·0; small lymphocytes, 43·4; large lymphocytes, 32·0; eosinophiles, 0·2; large mononuclears, 1·2; transitional, 1·4; myelocytes, 0·8; and normoblasts 0·6. The blood count show a marked increase of mononuclear cells, or a lymphocytic predominance.

On May 2nd the patient had an attack simulating hæmorrhage with symptoms of air hunger, restlessness, extreme pallor, perspiration, small, thready pulse, and with loss of vision. Death followed in an hour and fifteen minutes.

The autopsy findings showed the external lymphatics enlarged, and petechial hæmorrhages on the upper arms, right elbow and the front of the thorax, measuring 1 to 2 mm. in diameter. In the abdominal cavity the visceral and parietal surfaces of the peritoneum showed several groups of petechial hæmorrhages. The mesenteric lymph nodes were enlarged, softened, and greenish-red on section. There were areas of hæmorrhages from 1 to 3 cm. in diameter on both pleuræ. The lungs were crepitant and bluish, showing post-mortem congestion, with a greenish hue. There were greenish-yellow masses, soft and fibrinous, placed at the junction of the cartilages and sternum, measuring 1 to 2 cm. in diameter, apparently containing fat, and lying beneath the aponeurosis of the internal intercostal muscles. The spleen weighed 1,115 gms. and was markedly and uniformly enlarged. The capsule was smooth. On section the pulp was quite friable and of a pale reddish colour. The intestines were distended, and a small green nodule 5 mm. in diameter lay beneath the peritoneum on the greater curvature of the stomach. The pancreas was enlarged, firm and on section was of a pale green colour. The green colour faded rapidly on exposure to air. The

liver on section presented greenish areas between the lobules. The kidneys were both enlarged, the right weighing 490, the left 515 gms. The capsule stripped easily leaving a glistening lobulated surface. The cut surface was mottled with reddish and greenish-gray areas. The living membrane of the kidney pelvis was hæmorrhagic.

Summary of autopsy findings. Pale green tissue in the lungs, junction of sternum and costal cartilages, pancreas, lymph nodes, liver, kidneys, a whitish-green nodule on the lower border of the stomach and hæmorrhages into the skin and the kidney pelvis.

It has been shown that the polymorphonuclear leucocytes and their mother cells, the myelocytes of the bone marrow, possess an oxidizing ferment. This ferment can be shown by the indophenol reaction. The formation of indophenol (a dye, naphthol blue) occurs when dimethylparaphenylenediamine and alpha naphthol are brought together in the presence of an oxidizing ferment, which exists in myelocytes but not in lymphocytes.

Microscopical examination of the tumour tissue revealed in the splenic pulp large numbers of plasma cells, and numerous cells of the character of those described below in the infiltration of the kidney, and also fairly numerous large endothelial leucocytes laden with hæmosiderin, the lymphoid nodules being small and apparently encroached upon. The mucosa of the intestine showed some infiltration with the same type of cell seen in the blood stream.

The liver showed focal areas of apparent disintegration of the liver cells and infiltration about the portal spaces with cells described below. The sinusoids contained a fair number of cells seen in the blood stream generally.

The pancreas showed a dense infiltration throughout its substance and throughout the peripancreatic tissue by the same type of invading cells. The pancreatic epithelial cells were atrophied and the tubules separated from one another.

The kidney presented some diffuse infiltration between the tubules. This infiltration appears to be general throughout the kidney instead of being grouped in nodules as in many of the cases already described.

The invading tumour tissue consisted principally of mononuclear cells which vary from the size of a small lymphocyte to more than twice that of a polynuclear leucocyte. Their nuclei were round or irregular in shape. Some of the nuclei were vesicular and contained large chromatic masses. Others were smaller and more dense. The cytoplasm varied in amount. In some cells

the cytoplasm was filled with neutrophilic, in others with eosinophilic, and in many others with small, slightly basophilic granules. A fair proportion of the cells on the other hand were non-granular. Mitotic figures were fairly numerous both in the granular and non-granular cells. The prostate had some areas of lymphoid plasma cells infiltrating, and the cells described above in the tumour tissue.

The bone marrow was infiltrated throughout with the same type of cell, and only an occasional megalokaryocyte and erythrocyte were seen. The blood stream showed numerous cells similar to those seen in the tumour tissue.

Summary. This case is of interest for the following reasons:

1. It is a striking example of the rare condition ordinarily called chloroma.

2. It seems to demonstrate that chloroma and acute myelogenous leukæmia are the same process, viz., a malignant tumour which in the one case has invaded normal tissues outside the blood-stream, forming greenish masses, and in the other has confined itself principally to the blood and bone marrow.

3. It also illustrates the fact that a blood picture which by the ordinary methods is supposed to be lymphatic, may in reality be myelogenous. In this case the co-called "lymphocytes" are demonstrated in the routine sections and by the oxidase reaction to be undifferentiated cells of the myelocytic series.

Editorial

THE PRESIDENT'S ADDRESS

DR. MACLAREN found time amidst the many distractions of those details which fall to the lot of a president to prepare an address for the annual meeting, which was wide in its range and wise in selection. He seized upon the occasion to refer to the earliest medical visitors and give an historical setting to the meeting. The Association met in St. John in 1873, and again in 1894. On the earlier occasion Sir James Grant was president, and there were fifty-five members present, at the second meeting there were one hundred and nineteen, and Dr. Maclaren refers with feeling to the presence of such men as Graham, Wright, Hingston, Buller, Bell, Bayard, Parker, Farrell, Muir, and MacLeod. In those far-off days the profession was concerned about such questions as a Dominion Medical Act, interprovincial registration, and a uniform standard of medical education. These questions have been solved, but others of equal importance have taken their place, and members need not be discouraged if the solution is delayed. A department of public health, for example, will be established in due season.

Of immediate importance was that part of the address which dealt with the organization of the Association, and the President gave expression to the feeling in the mind of every member when he urged that the Constitution should be altered to meet needs as they arise. On frequent occasions it has been pointed out in these pages that the present arrangements bear heavily upon Ontario, and that provision against holding a provincial meeting when the Dominion meeting is held within the borders of the province might well be abrogated. It may well be, too, that the financial relations require revision.

If Dr. Maclaren did not offer any specific solution of the problem, he did indicate the temper in which it should be approached.

To most people, even to members of the profession, it will be a revelation how much the physicians of Canada are doing towards national defence at a time when so much is being talked in other quarters and so little done. Previous to 1899 there was no medical service in connexion with the militia, except a surgeon attached to each regiment. Now there is an Army Medical Corps of seven hundred officers and eighteen hundred men and non-commissioned officers, which merited the outspoken commendation of the Inspector-General. Dr. Maclaren has done much towards the organization of this service, and his plea for its enlargement in the interests of the members themselves as well as for the benefit of the country at large is bound to be productive of good.

THE ADDRESS IN MEDICINE

THERE are two methods of constructing an address to be delivered before a medical association. The one is to give a history of medicine, or of some part of it, from the time of Hippocrates until the day of the meeting. The other and less ambitious is to record with some detail the progress of the science for the current year. In the address which Dr. McCrae is to give before the Canadian Medical Association in St. John at the annual meeting on July 7th, neither of these time-honoured methods is followed. Nor does he bring to the notice of the members any new or strange disease. He does not even mention his own researches, and they have been numerous and the results important. He deals with simple things, so simple that they can be conveyed in the form of a fable.

Every art is eventually destroyed by the machinery it creates for itself, and medicine is in a like danger. The practitioner by too persistent reliance upon his instruments of

precision falls into the situation of one who has eyes and sees not, and having ears hears not. He becomes so ignorant of the principles of diagnosis that he will perform a laparotomy to elucidate a simple abdominal condition, or have an *x-ray* plate made to disclose what a trained eye would discover for itself. Indeed, Dr. McCrae mentions the case of a patient in his own wards, who had three abdominal sections made in the vain effort to discover the cause of his abdominal pain, which a physical examination would have shown was due to a spondylitis.

The burden of the address is education—education of the senses and of the mind, by which the habit of patient observation is learned and correct inference drawn from the things seen. It is a plea for simplicity, for a return to those principles which were first enunciated at Knidos and at Kos by the father of medicine himself. This plea for a return to Greek simplicity is all the more important coming as it does from one who has himself mastered all the learning of the Americans, and made himself familiar with their technique. There is in it much encouragement for the physician who practises his profession far from the centres of population and deprived from the paraphernalia of a modern hospital. It is for these the meetings of the Association are especially designed, and on that account Dr. McCrae's words are fitly spoken.

THE PENITENTIARY

A COMMISSION was appointed by Order in Council on August 25th, 1913, to investigate the state and management of the Kingston Penitentiary and the report of this Commission has now been issued. In considering conditions as they exist, the wording of an Act passed by the Parliament of Upper Canada eighty years ago is of interest: it reads, "Whereas, if many offenders convicted of crimes were ordered to solitary imprisonment, accompanied by well-regulated

labour and religious instruction, it might be a means, under Providence, not only of deterring others from the commission of like crimes but also of reforming the individual and inuring them to habits of industry, etc. etc." The findings of the Commission show a staunch adherence to the principles here set forth and solitary confinement has been an important feature of prison discipline. The lack of ventilation and sanitation has made the dull monotony all the more irksome and has tended towards sullen moroseness and a feeling of hopelessness that offered little inducement towards better conduct. The conditions in the workshops were found to be fairly satisfactory, with exception of the stone-breaking shop. Here affairs were nothing short of an outrage—the dust-charged atmosphere and the prisoners ranged in rows facing each other, "crouching over their unhealthy, unprofitable, degrading tasks," in a sullen silence broken only by the monotonous rap-rap of the hammers. The system of "cellular feeding" is strongly condemned by the Commissioners, because of its wastefulness and because of its bad effects upon the prisoners.

The treatment of the insane calls for particular comment, in the hope that the methods which now are employed will soon give place to others more scientific. The building in which the insane are placed is entirely unsuitable, "it is defective in structural arrangement, lacking in nursing and medical facilities, and devoid of means of providing occupation. The physical condition of the patients shows the effect of improper diet, insufficient exercise and fresh air. . . . There is no provision for the proper classification of prisoners." Moreover, the evidence given at the enquiry shows that the convicts have not received proper attention; they have received scant medical attention and the punishments meted out to them have sometimes been unjustifiable. The Commissioners recommend that a competent alienist be employed to advise the government in technical matters, and that suitable and permanent arrangements be made for the treatment of the

criminal insane. In Western Canada, the provincial governments take charge of such convicts: this might be arranged in the East also. Or an institution might be built exclusively for the detention of such persons.

The conditions described in the report have been in existence for many years and those who should have attempted to ameliorate them have justified themselves by the assumption that what was, will be. The enquiry has now been made and the result will be awaited with interest. It is encouraging to know that the Toronto jail is to be abolished next year and that it will be replaced by corrective institutions of varied character to suit the case under consideration.

MAKING MONTREAL DRINK SEWAGE

MONTREAL has recently been compelled to drink chlorinated sewage for three days, and it is stated that the city will before long have to submit to ten days more of the same thing. The water from the Lachine Canal was turned into the water mains, and into it a large amount of hypochlorite was put. It looked dirty; it left a scum on the side of a bathtub; it stank of chlorine; and along with it one newspaper published statements from the authorities that this was a satisfactory water supply, and that it was a better water supply than Pittsburgh or Philadelphia has. Neither statement is true.

The Lachine Canal is liable to have in its comparatively small, slow-flowing bulk of water, the drainage of several miles of the shore of Lake St. Louis. A large fleet of steamers, barges, and tugs sails through it every day; what about the closets on these ships? What about the slops? What about the casual deckhand who spits overboard? The authorities of the city stated that they placed men on these boats whose duty it was to see that the closets were closed, and that no filth was put into the canal while the ship was going through. Frankly, we do not believe that the average

employee of the city could enforce this; what can he know of under-water closet flushings? How can he know by instinct how many sources of filth there are on the ship? And how about the barges and tugs? Were there enough employees to put one on each tug and barge for each trip? And what about the dozens of barges tied up in the canal? Further, drains open into the canal; perhaps sewers also. Last week a dead body was found in it of a man missing for a long time.

The whole idea of a city supplied from such a sewer with its drinking water is repulsive. It makes one indignant to think that the so-called engineers who devised its water supply were so blind or ignorant that a city nearly three centuries old, that ranks among the large cities of this continent, even of the world, has, at this late date, a water supply which a mining camp of six months standing would be ashamed to own. Canada has pure water everywhere available—and Canadians have been so improvident and stupid that they are drinking chlorinated sewage in 1914!

Let intending immigrants be told of this! It is their right to know what they would come to in Montreal.

We do not want to be told by experts that this is the only source available to us. We are tired of analyses and statements in the press that there is no danger. We are sick of hearing that the engineers and other city employees are satisfied with the results of their tests—we are not! If anyone argues that our statements are exaggerated or uncalled-for, we would say to him, "Go and look at the canal." Montreal should not spend a dollar on pavements, on expropriations, or on raising civic employees' salaries until money is provided to give us a proper emergency water supply from the river, at least, even if it costs a million dollars.

SITTING UPON THE WALL

SEWAGE from the Lachine Canal is to be distributed again as drinking water to the citizens of Montreal. The physicians, individually and in their corporate capacity, have

protested, but the warning has fallen on deaf ears. Witness the following resolutions:

"Resolved, That the Montreal Medico-Chirurgical Society makes public protest against the outrage of the people being compelled to use water from the Lachine Canal.

"That the Society hears with distrust numerous inspired statements which say that the Lachine Canal furnishes an 'adequate,' a 'healthy' or a 'safe' water supply.

"That the Society considers that in compelling the use of Lachine Canal water for 'test' purposes, the Mayor and the Board of Control are abusing the power which the people have temporarily given them.

"That the Society deplores that in this matter essential to the health of the community, the Mayor and Board of Control should dare to act save in concert with the City Medical Health Officer; and that they should have issued only a perfunctory warning to the people lately that Lachine Canal water was about to be supplied to them.

"That a copy of this resolution be sent to the Board of Control, which by a majority vote, ordered the use of this water supply."

This was two months ago. At the same time a deputation was appointed by the Medico-Chirurgical Society to wait upon His Worship and the Board he controls. An appointment was asked for, and the receipt of the letter was acknowledged. But the society is not a labour union, nor does the deputation consist of labourers looking for jobs at one and a half times the union rate of pay. Consequently the deputation is still waiting. Good government is not to be looked for in a community that prefers to be governed badly. A communication embodying these resolutions was sent to the newspapers of the city. One of them is known to have published it, none offered any comment. And the people of the metropolis of Canada how is it with them? Is it long-suffering or indifference, or worse? Typhoid, forsooth, is only the modern Mumbo-Jumbo conjured up in various forms by the medicine man in all ages, while compared with dilute, highly chlorinated sewage your filtered water would be insipid!

The age of miracles is past. Who, then, shall deliver *us*

out of the hands of the Assyrian? In the days of Hezekiah, King of Judah, Sennacherib sent unto him his messenger. The Mayor and Board of Control bring again to the people of Montreal that message which Rab-shakeh—the name, being interpreted, aptly signifies Chief Cup-bearer—delivered to Eliakim, Shebna, and Joah, and to the men of Jerusalem who sat upon the wall. The message contained this threat, which, for an unbiblical generation, must be veiled in the decent obscurity of a dead language: *Ut comedant stercora sua et bibant urinam suam.*

THE recognition which Dr. T. G. Roddick has received at the hands of his sovereign does appear as a mark of favour well placed. It merely means that Dr. Roddick's qualities, which have always been appreciated by his friends, are now disclosed to a larger world. No honour was ever better deserved, and none will be worn more worthily. By his services to the profession and to humanity at large Dr. Roddick attained to a position so outstanding that his recognition became inevitable. It is in that the real honour lies.

AT the recent meeting of the Royal Society of Canada, a committee was appointed to enquire into the frequent cases of gas poisoning by illuminating gas. The members of the committee are Sir Thomas Roddick, Dr. R. F. Ruttan, and Dr. Girdwood, of Montreal, and Dr. F. F. Mackenzie, of Toronto. The matter will be brought before parliament by the Royal Society in order that steps may be taken to prevent the adulteration of gas by carbon monoxide. The committee is desirous of obtaining reports of cases that have occurred within the past five years, information concerning the number of cases, whether male or female, adults or children, and the result of the illness—recovery or death. Such information would be appreciated; it should be sent to Dr. G. Prout Girdwood, 615 University Street, Montreal.

ALL who are in any way interested in medical bibliography will be gratified to learn that the danger which recently threatened the independence and efficiency of the Surgeon-General's library in Washington has not materialized. The amendment to the United States Army Appropriation Bill providing for the absorption of the library into the Library of Congress was ultimately dropped in Committee.

THE Surgeon-General of the United States Army has issued an open letter to owners, agents and masters of lake and river vessels, pointing out that there were admitted to the United States marine hospitals alone, during the last fiscal year, three hundred and ninety-two cases of typhoid among American seamen. The letter comments on the remarkable results obtained through compulsory anti-typhoid vaccination in the army, typhoid fever having been practically stamped out by this simple and harmless inoculation. It is announced that the Public Hospital Service is prepared to administer the prophylactic to all sailors who may apply at its relief stations on the Great Lakes and elsewhere.

DR. H. S. BIRKETT has been appointed dean of the medical faculty of McGill University, in succession to Dr. Shepherd, who is retiring from his professional engagements. Dr. Birkett graduated from the same university with the highest honours in 1888, and joined the staff in 1889. He entered the service of the Montreal General Hospital in 1891 as laryngologist, where he remained till 1899, when he became laryngologist and otologist to the Royal Victoria Hospital. In 1895 he was appointed professor of the same subjects in the university. Dr. Birkett has obtained all the honours which could fall to a surgeon practising his specialty, and for many years was identified with the medical service of the militia. He is yet in the prime of life, an excellent organizer, a strong upholder of the best traditions in medicine, and of

high esteem in the professional ranks of the two continents. His appointment meets with general approval and he will have the enthusiastic support of his colleagues and students.

REFERENCE has already been made in these columns to the proposed appointment of a full-time professor of medicine at Johns Hopkins University. The professorship has been accepted by Dr. Theodore Caldwell Janeway. Dr. Janeway is the son of Dr. Edward Gamaliel Janeway, of New York, who was a distinguished physician and teacher of medicine. Dr. T. C. Janeway graduated from the College of Physicians and Surgeons of Columbia in 1895. In 1898 he was appointed instructor, and later lecturer on medical diagnosis in the New York University; in 1907 he was elected associate in medicine; and in 1909 became professor of the practice of medicine at the Columbia College of Physicians and Surgeons. In 1911 he was appointed a member of the Rockefeller Institute for Medical Research, and he has acted as secretary and treasurer of the Russell Sage Institute of Pathology since 1907. He is also a member of the editorial board of the *Archives of Internal Medicine*. For the past ten years Dr. Janeway has devoted himself in great measure to research and clinical medicine and his book on the *Clinical Study of Blood Pressure*, is well known. Under the new arrangement Dr. W. S. Halsted will continue to occupy the chair of surgery and Dr. John Howland that of pediatrics. It is announced that Professor L. F. Barker will retain his connexion with the university and medical school in an important capacity. The practical result of this radical departure from older methods will be awaited with interest.

THE arrangements have now been completed for the publishing of the *Medical Journal of Australia*. The new journal will be edited by Dr. H. W. Armit, of London; it will be published in Sydney, and the first number is to appear on the fourth of this month.

At the invitation of Sir Rickman Godlee, some fifty surgeons of the United Kingdom met together at the Royal College of Surgeons of England on May 26th. The result of the meeting was the formation of an Association of British Surgeons. It will be remembered that a few years ago the Association of British Physicians was formed through the efforts of Sir William Osler. It is proposed that the number of members of the new organization shall be limited and that for the most part they shall consist of surgeons on the staffs of hospitals connected with some medical school. Each year a meeting will be held, which will last for two or three days. A different place of meeting will be chosen each year.

A PETITION has been sent to the Chancellor of the Exchequer by Sir Ronald Ross, of the London School of Tropical Medicine, requesting that some reward should be made by the nation to investigators who have made valuable discoveries in the scientific world. Sir Ronald considers that when such discoveries bring advantages to a government, that government should make some return to the individual who made the discovery. Endowments for research work do not quite meet the case, because research work which is paid for frequently becomes somewhat automatic. Were it customary to reward successful investigation by private individuals, a great stimulus would be given to research of all kinds, and it is hoped the Chancellor will be able to give the matter favourable consideration.

THE Imperial Health Conference, which was organized by the Victoria League, was opened at the Imperial Institute, London, May 18th, by Mr. Lewis Harcourt, secretary of state for the Colonies. The exhibition, which was arranged in connexion with the conference, was opened by the Marquis of Salisbury. An interesting address was given by Mr. Herbert Samuel on Housing and Town Planning. Mr.

Samuel reminded those present that during the past twenty years the death rate in England had been reduced by one-third. He thought town planning should be obligatory and referred to the proposal that the government should ask parliament for an annual grant of £4,000,000 to be expended by local authorities in public health work. Other well-known authorities took part in the discussion. The care of child life came up for consideration on May 20th, and on the 21st, the question of child wage earners was discussed. Lord Robert Cecil, who presided, considered the coöperation of the parent of more importance than legislation in this question. The old social troubles are appearing fast in Canadian cities. The close connexion between temperance, morals, and housing conditions is at last being recognized, as is shown in the change of the name of the "Board of Temperance and Moral Reform" to the "Social Service Council." The first Dominion Social Service Congress was held in Ottawa last March and the occasion was one of great public interest—apparent by the varied crowds who attended the meetings. The programme was an extensive one, perhaps embracing too much; but it was the first congress of its kind to be held in Canada and should bear fruit next year when the delegates meet in Winnipeg.

A STRIKING reduction has taken place during the past few years in the mortality from all causes in England and Wales. In 1912, the death rate was 13·3 per thousand, which is 27 per cent. less than the mean yearly rate during the period 1891-1900. In the case of infectious diseases, the decline is equally marked. Comparing the figures for 1891-1900 with those for 1912, measles has declined 16 per cent., scarlet fever 66 per cent., whooping cough 40 per cent., diphtheria and croup 57 per cent., and enteric fever 75 per cent. As for tuberculosis in its many forms, the mortality in 1912 was 32 per cent. less than during the period from 1891 to 1900; that from phthisis was 25 per cent. less. And yet, even now, over thirty-five thousand deaths are caused by phthisis each year in England and Wales alone.

Book Reviews

ATLAS UND LEHRBUCH WICHTIGER TIERISCHER PARASITEN UND IHRER UBERTRAGER MIT BESONDERER BERUICKSICHTIGUNG DER TROPENPATHOLOGIE. By R. O. NEUMANN and MARTIN MAYER. Munich: J. F. Lehmann, 1914.

A medium-sized volume of 566 pages, with forty-five lithographed prints and two hundred and thirty-seven text figures.

This volume continues the high standard of excellence in illustration which was set by the preceding volumes of Lehmann's medical atlases, of which the present work is one. It would be hard to say too much in praise of the arrangement of the book or of the manner in which its text is printed and its illustrations reproduced. It will inevitably become one of the works most consulted by physicians who practise in the tropics, or who are brought into contact with parasitic diseases.

EXTRACTION OF TEETH. By F. COLEMAN, L.R.C.P., M.R.C.S., L.D.S. Second edition. Illustrated. Price 3s. 6d. net. London: H. K. Lewis, 1914.

This is the second edition of a book which was published eight years ago, and it is not materially altered in text or illustration, although a certain amount of revision was found necessary. The main value of the book is that it elevates the practice of extracting a tooth to the dignity of a surgical operation, and at times a very serious one. The author quite properly makes much of the skill that is required on the part of the operator, and the development of his tactile and muscular sense. For the working dentist the book is invaluable, and for the general surgeon very useful.

PATHFINDERS OF PHYSIOLOGY. By J. H. DEMPSTER, A.B., M.D. Detroit: The Detroit Medical Journal Company, 1914.

The history of medicine is really the history of humanity, and it has long since become too extensive, too elaborate, and too complicated for even the specialist to master. Already it is falling into its divisions, and scarcely a month passes without the appearance of a monograph or a book upon some phase of the subject.

These are mainly biographical and following the custom, Dr. Dempster has chosen a group of men for delineation, namely, those whose names are indissolubly bound up with physiology. They are, Harvey, Beaumont, Bernard. In addition, he has chosen certain subjects—digestion, respiration, the nervous system, the cell theory—and around these he has grouped the personalities which have been associated with them. The main current of physiology is well indicated, and the book contains in small compass an amazing amount of information which is not usually accessible.

SURGERY: ITS PRINCIPLES AND PRACTICE. By ASTLEY PASTON COOPER ASHHURST, A.B., M.D., F.A.C.S., Instructor in Surgery in the University of Pennsylvania. Large octavo, 1141 pages, with 7 coloured plates and 1032 illustrations, mostly original, in the text. Cloth, \$6.00, net. Lea & Febiger, publishers, Philadelphia and New York, 1914.

The principles of any science which is not entirely abstract, require to be re-stated continually. The principles of surgery, as they were understood forty years ago, are not in their entirety the principles of surgery to-day. Through practice new principles have been discovered, and many old ones were discovered to be not principles but incidents or accidents. Accordingly text-books which were once in vogue have been revised to bring them into accord with new knowledge, but something of the old inevitably clings to them. An entirely new text-book is one of great interest on account of its very freshness. This book, whose superscription is given, is designed to state anew the principles of surgery, and to deduce from them certain rules of practice. The author has, as we think, a correct notion of the nature of his business, which is to afford a new perspective, to place the various divisions in their proper relative position, to maintain their just proportions, and to indicate where further knowledge may be gained. He has succeeded in his design, and furnishes the student with clear and accurate statements in an attractive form. The book is the outcome of the best practice of what may be called the Philadelphia School. The writing is marked by scholarship and style. The illustrations are all original, all useful, and many of them beautiful. The book is published in the admirable manner to which Lea & Febiger have accustomed us. We venture to predict for it a warm reception at the hands of students and practitioners.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

RADIUM AND RADIOTHERAPY. RADIUM, THORIUM AND OTHER RADIOACTIVE ELEMENTS IN MEDICINE AND SURGERY. By WILLIAM S. NEWCOMET, M.D. Illustrated. Price \$2.25 net. Philadelphia and New York: Lea & Febiger, 1914.

BLOOD-PRESSURE IN MEDICINE AND SURGERY. A GUIDE FOR STUDENTS AND PRACTITIONERS. By EDWARD H. GOODMAN, M.D. Illustrated. Price \$1.50 net. Philadelphia and New York: Lea & Febiger, 1914.

CLINICAL HEMATOLOGY: AN INTRODUCTOIN TO THE CLINICAL STUDY OF THE SO-CALLED BLOOD DISEASES AND OF ALLIED DISORDERS. By GORDON R. WARD, M.D. Octavo of 394 pages, illustrated. Price \$3.50 net. Philadelphia and London: W. B. Saunders Company, 1914.

ASTROLOGY IN MEDICINE THE FITZPATRICK LECTURES DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS ON NOVEMBER 6TH AND 11TH, 1913, WITH ADDENDUM ON SAINTS AND SIGNS. By CHARLES A. MERCIER, M.D. Price 60c. Toronto: The Macmillan Company of Canada, Limited, 1914.

MATERIA MEDICA FOR NURSES. By A. S. BLUMGARTEN, M.D. New York: The Macmillan Company, 1914.

AURICULAR FLUTTER. By W. T. RITCHIE, M.D., F.R.C.P.E., F.R.S.E. Price 10s 6d. Edinburgh & London: W. Green & Son, 1914.

THE CLINICAL HISTORY IN OUTLINE. By P. G. WOOLLEY, S.B., M.D. Price \$1.00. St Louis: C. V. Mosby Company, 1914.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

THE DIAGNOSIS OF PERITONITIS IN INFANCY. By DR. RICHARD DRACHTER, Munich. *Muenchener Medizinische Wochenschrift*, No. 11, 1914.

THE picture of acute diffuse peritonitis is usually so marked that the correct diagnosis is made without difficulty. The most important signs are, as we know, rigidity of the abdominal wall, localized pain and sometimes vomiting. The temperature is variable and may even be subnormal; certainly no one can determine the severity of the peritonitis by the height of the temperature. In dealing with adults or intelligent children we can always ask questions and obtain answers which aid in the diagnosis; also we can get them to inspire and expire at command when determining the amount of true rigidity, and inquire as to the exact location of the pain. It is quite otherwise in the case of infants and young children. Many refractory children, when examined, will lie on the back, draw up one or both legs, scream incessantly and keep the abdomen rigid, while other symptoms such as vomiting and intestinal paralysis may be absent, and thus it is almost impossible to make a diagnosis. In the examination of a large number of cases of peritonitis in the children of his clinic Drachter has during the past year followed a method of examination of his own. It occurred to him that it would be valuable to have some reliable sign that could be elicited by manipulations as far as possible from the diseased and tender part—the abdomen. As is known, appendicitis and early peritonitis in children are difficult to diagnose from pneumonia, meningitis, the infectious fevers, pyelitis and so forth, and in these doubtful cases he employs a test that is well known as a diagnostic sign for coxitis. It consists in raising the right leg by grasping the toes with the left hand, keeping the knee joint extended, and striking the plantar surface of the foot a light but firm blow. The jar causes a slight rubbing of the visceral and parietal peritoneum against each other, but quite sufficient to cause pain if there is a peritonitis. The result is usually that the child reflexly protects his abdomen with his hands, showing that the pain

caused is truly abdominal; the advantage of such a test being at once apparent since abdominal pain is the last thing the child would think of feigning during the manipulation of the foot. It must of course be remembered that inflammatory and even purulent processes may be present in the abdomen without causing the child to react to the above test, which is understood when one realizes that inflammation causes adhesions which may prevent the peritoneal surfaces from rubbing. If the sign is positive in an otherwise doubtful case the diagnosis of peritonitis is to be accepted; if it is negative the other symptoms alone must decide.

THE IMITATIVE DISEASES OF CHILDHOOD. By DR. AUGUST STRAUCH. *Muenchener Medizinische Wochenschrift*, No. 11, 1914.

The imitative instinct that is so well marked in children is of fundamental importance for the intellectual development not only in the normal but in the pathological direction. On every side we see many instances of what this instinct performs. Even at a very early age are imitative actions noticeable, the most elementary example being the cry of the child who hears other children crying. Later the imitative faculty becomes more complicated by the acquisition of knowledge, will and intuition. Instinct gradually plays a lesser rôle as the child grows and develops understanding and originality, which act upon the imitative faculty like a brake. But this imitative tendency never entirely disappears, and the individual is always liable to suffer psychic contagion or, as we more commonly designate it, suggestion. Indeed whole communities as well as individuals may suffer from an epidemic resulting from suggestion. In children this inclination to imitate is the result of the provocative stimulus passing through the central nervous system without being sufficiently inhibited by the cortical centres, so that a reaction or reflex, as it were, is at once obtained. The result of this is the echoing and attitudinizing seen in weak-minded children and in cases of dementia præcox. This reflex automatism is especially noticeable in the mongolian idiot. An hysterical disposition is particularly fruitful soil for the development of pathological imitations. Since human speech is the result of imitation it follows that there may be speech defects if the teacher, or speech standard, suffers from a defect. Stammering and lisping are often noticed in several members of a family where one member alone has a defect of speech. The "infectious" nature of a yawn is well

known, as also of emotions such as joy, sorrow, fear and so on. In speaking of nervous contagion Montaigne says, "The sight of pain in others causes it in myself, and a person who coughs violently rasps my lungs and throat." Madame de Sévigné, in a letter to her tuberculous daughter, writes, "*J'ai mal à votre poitrine.*" When certain peculiarities occur that are the result of environment it is often difficult to indicate the line of demarcation between physiological and pathological conditions. Nervous manifestations, such as convulsions, loss of consciousness and hallucinations in a large congregation of people are not infrequently seen in the United States of North America in the religious camp-meetings of the Methodists, especially among the negroes of the southern states. Psychic epidemics are also seen in girls' schools; trance-like conditions, tremors, screaming-fits and coughing are perhaps of most frequent occurrence. Such epidemics are not necessarily of an hysterical nature; they may attack healthy, non-neurotic children who merely have a markedly developed tendency to imitation. Again, one sometimes sees nocturnal enuresis occur in previously healthy children from their having been in contact with school comrades who suffer from this condition. Indeed such an epidemic has been known to spread through an entire school. Other examples are: a young girl began to limp after seeing a cripple at a health resort. A boy lost the power of walking from unconsciously imitating his brother who suffered from a post-diphtheretic paralysis of the lower extremities. A child developed nervous dyspnoea in imitation of her dyspnoeic mother and a tremor when trying to write such as was displayed by her father. Another child vomited for months after an ocean voyage with her seasick mother. Chorea imitatoria is frequently seen; polyuria has been observed in the children of a diabetic parent, and many other examples might be cited. Not only the diseases of others but the disease of the child himself must be taken into consideration under this question of imitation, for the subjective symptoms of an organic disease may be reproduced after recovery. Relapses after chorea are often the result of auto-imitation, and frequent although normal stools may persist after a protracted attack of diarrhoea. These imitative disturbances are probably in the majority of instances the result of folly and pampering on the part of the parents who gratify the child's every wish and encourage this unhealthy psychic element.

CHRONIC NICOTIN POISONING. By H. FAVARGER, Vienna. *Wiener Klinische Wochenschrift*.

With cigar smokers the symptoms occur in later years and are chiefly connected with the heart; in the case of cigarette smokers the results are seen early and are chiefly nervous manifestations. The nervous symptoms that result from cigars are of a more depressant character: dulling of the intellect, Daltonism, occurrence of a central scotoma, stupor, etc., while cigarettes cause such symptoms as excitability, sleeplessness, tremor, weariness and the like. Nicotin may also cause diarrhoea alternating with constipation, and also gastric ulcer. Palpitation of the heart may occur followed by arrhythmia, bradycardia, tachycardia, præcordial pain and even Cheyne-Stokes respiration and paralysis of the heart. The pathological changes are fatty degeneration of the myocardium and, less frequently, arteriosclerosis.

London, Ontario.

G. C. HALE.

THE June number of the *Union Médicale du Canada* contains a report by Dr. E. P. Benoit on anti-typhoid vaccination at St. Johns, Quebec, during the recent epidemic. The persons vaccinated were carefully chosen beforehand and only those who were considered healthy were inoculated. Eighty cases were treated. The vaccine used was prepared in the laboratories of the Bureau of Hygiene, Paris, and was obtained from Professor Chantemesse. Four injections were given at intervals of eight days and the results were entirely satisfactory. No ill effects were observed and in one or two instances, the person vaccinated was the only one of the family to escape infection. Two cases, which evidently had already contracted the disease, became ill in spite of one treatment, but the injection did not aggravate the illness in any way.

Res Judicatæ

EMERODS, MICE AND THE PLAGUE OF I SAMUEL VI.

IT seems admitted that Biblical scholars are by no means un-animous as to all that is involved in I Samuel vi, particularly, verse five, which reads: "Wherefore ye shall make images of your emerods and images of your mice that mar the land."

This recommendation was made by the priests and diviners of the Philistines on account of a plague that attacked their people and appeared to have some connexion with the presence of the Ark of the Lord in their midst.

Maspero and Sayce thus describe the situation:* "It so happened that the Ark of the Lord, the ancient safeguard of Ephraim, had been lying since the battle of Eben-Ezer not far away without a fixed abode or regular worshippers. The reason why it had not brought victory on that occasion was that God's anger had been stirred at the misdeeds committed in His name by the sons of Eli and desired to punish His people; true, it had been preserved from profanation, and the miracles which took place in its neighbourhood proved that it was still the seat of a supernatural power.

"At first the Philistines, according to their custom, had shut it up in the temple of Dagon at Ashdod. On the morrow when the priests entered the sanctuary, they found the statue of their god prostrate in front of it, his fish-like body overthrown and his head and hands scattered on the floor; at the same time a plague of malignant tumours broke out amongst the people and thousands of mice over-ran their houses. The inhabitants of Ashdod made haste to transfer the Ark to Gath, from Gath it passed to Ekron, and it then went the round of the five cities, its arrival being in each case accompanied by the same disasters. The soothsayers being consulted at the end of seven months, ordered that solemn sacrifices should be offered up and the Ark restored to its rightful worshippers accompanied by expiatory offerings of five gold mice and five golden tumours, one for each of the repentant cities."

In a footnote to this passage we read: "In the Oustinoff collection at Jaffa there is a roughly-shaped image of a mouse cut out

* *History of Egypt*, Vol. VI., p. 345. The Grolier Society, London.

of a piece of white metal and perhaps obtained from the ruins of Gaza; it would seem to be an *exvoto* of the same kind as that referred to in the Hebrew text, but it is of doubtful authenticity." The representation, if of a mouse, is anatomically incorrect in several respects, one of them being the absence of a tail. Not until the recent knowledge of the ætiology of plague had been acquired could we have understood the significance of the making of these golden mice.

It is now known that bubonic plague, so common in India, is due to the presence in the blood of a bacillus known to pathologists as the bacillus pestis. This micro-organism was discovered in 1894 by the Japanese workers, Yersin and Kitasato, to be the cause of plague. But it is also known that rodents—mice, rats, marmots—are attacked by this same bacillus pestis and can therefore suffer from their form of plague. Further it has been established that the usual method of infection is, in the case of man, to be bitten by a flea which has been feeding on a plague-stricken rat or other rodent. That is to say, a carrier is necessary to convey from the diseased animal some of its blood containing the bacilli of plague, which, being introduced by the flea into the human being, can cause the development of plague in that individual. One of the characteristics of this form of plague is the development of buboes, tumours or swellings of the lymphatic glands in the groin or arm-pits, most commonly in the groin, the word *bubo* being derived from the Greek for the groin.

It is very remarkable that the priests should have recommended placing in the Ark not only five golden emerods but also five golden mice. The word emerod is a variant of hæmorrhoid and seems to be used in this and certain other passages where plagues are mentioned as the synonym of "tumour." Thus in Deuteronomy xxviii, 27, we read: "The Lord will smite thee with the botch of Egypt and with the emerods and with the scab and with the itch whereof thou canst not be healed."

The interest attaching to the emerods in the Ark is, then, that we may take it as exceedingly probable that the plague of I Samuel vi, 5, was bubonic plague. But a higher interest still belongs to the five golden mice for they seem to point to some suspected connexion between the diseased lower animals and the plague-infected people. The mice that overran the land were in the light of modern knowledge almost certainly a link in the chain of infection; it was not merely that they overran the land, it was that they were a causal or antecedent factor in the production of the human epidemic.

Whether the Philistine soothsayers recognized this causal link we cannot now say definitely; if they did suspect the connexion between the mice and the bubonic plague, they anticipated scientific truth by more than 2000 years.

The Oxford Dictionary quotes a writer in 1855 who remarks: "The mice and emerods of gold were essentially charms." It is perfectly possible that the images in the Ark were intended as different charms, the emerods against the human plague, the mice against the overrunning of the land by the vermin; but it is certainly exceedingly striking to find the tumours and the rodents associated at so remote a date when we know that only quite recently has it been established that rodents are a necessary factor in the production of human bubonic plague.

"No rats, no plague," is an old saying amongst the people of India.

It was not of course until the microscope had reached its present high stage of perfection that the various links in the chain of evidence connecting the microbe at one end and the man at the other could be made irrefragable, but it is certainly interesting to know that the "Black Death," which was for two millennia one of the most terrible but elusive of all the mysterious influences that warred against mankind, has been captured and identified and made to reveal the dreadful secret of its origin.

It is only now that we are *not* afraid for the pestilence that walketh in darkness nor for the destruction that wasteth at noon-day." The awful spectre of plague, the incubus of antiquity and of the middle ages, has been met at last face to face and has been routed by the "dry light" of science, that light that streams up through the lenses of the microscope, the veritable "*in hoc vinces*" of biology.

Halifax.

D. FRASER HARRIS

MEDICAL COUNCIL OF CANADA

THE second annual meeting of the Medical Council of Canada took place at Ottawa on June 16th and 17th. All the members were present except Dr. McKechnie of Vancouver, Dr. W. Bapty of Victoria, and Dr. Jenkins of Prince Edward Island. Dr. E. A. Braithwaite, of Edmonton, was introduced and took his seat for

the first time, having been appointed by the crown to replace the late Dr. Kennedy of Macleod.

The outstanding feature of the meeting was the resignation of Dr. (now Sir Thomas) Roddick from the presidency. His request to be relieved was accepted with genuine regret by the entire council, but Sir Thomas made a personal appeal to be relieved which could not be disregarded. It was realized that he had borne the heat and burden of the day in bringing about Dominion registration and now that his baby had cut its eye teeth it was only fair that its founder should be granted an honourable retirement if he so desired. The council, however, elected Sir Thomas honorary president for life with a seat on the executive committee, so that his valuable services will not be entirely lost to the council.

Dr. R. S. Thornton, of Deloraine, Manitoba, was elected president and Dr. R. J. Gibson, of Sault Ste. Marie, Ontario, vice-president. Dr. R. W. Powell of Ottawa was appointed registrar again for the ensuing year, and Mr. F. H. Chrysler, K.C., was appointed general counsel. Mr. G. L. Blatch was appointed auditor.

The various committees were elected on the last day of the meetings. The auditor's report gave a detailed statement of receipts and expenditure, showing a comfortable balance on the right side of the ledger with which to begin the year's work. The registrar, in his report, gave it as his opinion that a much larger class will present themselves for examination this autumn than did last, but it is too early to forecast the figures. It was decided to hold the examinations this year at Montreal on October 13th, and that an opportunity should be extended to western applicants for next spring by holding an examination at Winnipeg on June 15th, 1915.

The registrar was instructed to publish his second announcement as soon as possible and we are informed that it is now in the hands of the printer and will be out about July 1st. It will contain the register of Canada up to date.

Before the meeting closed it was decided to offer the Honorable Dr. W. J. Roche the diploma of the council, L.M.C.C. *Honoris Causa*.

One hundred and eight cases of measles were reported in Hamilton during the week ending June 13th.

Obituary

DR. THOMAS TRENAMAN of Halifax, died April 27th, in the seventy-first year of his age. Dr. Trenaman was born at Halifax and was educated at King's College, Windsor, Nova Scotia. He obtained his medical degree in 1869 from the College of Physicians and Surgeons of New York. Dr. Trenaman was medical officer of health at Halifax, where he had practised for more than forty-five years. He had been in failing health for the past twelve months but had continued his professional work.

DR. JAMES S. MORRIS, of Grimsby, Ontario, died May 22nd. Dr. Grimsby had practised in Grimsby for seventeen years and he was immensely popular both as a physician and as a citizen. He was born in Oshawa in 1873 and graduated from the University of Toronto in 1896. He leaves a widow, two sons, and one daughter.

DR. W. P. JONES, of Prescott, Ontario, died May 19th, in the eighty-second year of his age. Dr. Jones was one of the oldest physicians in Ontario and had practised in Prescott since 1874. He was born in Prescott in 1832.

DR. MILTON I. BEEMAN, of Newburgh, Nova Scotia, died May 10th, in the sixty-third year of his age. Dr. Beeman was well known and much respected both in Lennox and Addington, where he had practised for forty years. For some years he was a member of the provincial board of health; he was also a major in the 47th Regiment. He leaves a widow, four daughters, and two sons.

DR. G. W. HURLBURT, of Thorbury, Ontario, died May 12th. He was seventy-seven years of age. He had a large country practice and was greatly respected.

DR. W. E. HAMILL, of London, Ontario, died on Sunday, May 31st. Dr. Hamill was a graduate of Toronto University. After obtaining his M.D. degree, he took a post-graduate course in London and on his return to Canada went into practice as an oculist. He leaves a widow and one daughter.

News

ONTARIO

DR. H. R. McCULLOUGH has been appointed medical officer of health at Hamilton, to succeed Dr. S. M. Henry who has been elected Mayor of Hamilton.

SCARLET fever has broken out in the Indian Reserve at Cape Crokes, twenty miles north of Wiarton. Five deaths are reported.

FIVE hundred cases of measles are reported in Hamilton. At present the cases are confined to the east end of the city.

THE provincial health department of Ontario has received a request that the tuberculosis exhibit which has been sent to the towns and cities of the province, shall be sent to the International Tuberculosis Convention which is to take place this year at Lyons, France.

DR. AGATHA DOHERTY, of Toronto, has been appointed senior house surgeon to the new London Hospital for Women.

DR. CHESTER P. BROWN, of Toronto, has been appointed assistant medical officer and bacteriologist at the William Head Quarantine Station.

Reports from Prince Arthur, Fort William, Windsor, and other places in the province show that scarlet fever is very prevalent.

QUEBEC

THE sum of \$4,872 was collected recently by means of a flower sale in aid of the tuberculosis hospital which is to be built at Quebec.

MONTREAL is to have a municipal laboratory. It is to be under the directorship of Dr. H. St. George.

POST-GRADUATE courses in the diagnosis of tuberculosis are

being given at the Bruchesi Institute, Montreal, under the direction of Professor S. A. Knopf of New York. Each course lasts for fifteen days and the number of those who take advantage of it is limited to six, so that each person receives individual instruction. The fee is \$15.

The *British Medical Journal* for June 6th, 1914, contains a letter referring to the gallant behaviour of Dr. James F. Grant, surgeon of the ill-fated *Empress of Ireland*. The letter is written by a ship surgeon. Dr. Grant is a graduate of McGill University.

AN outbreak of smallpox is reported from Varennes and Boucherville. Sixteen cases have already been reported.

MANITOBA

A GRANT of \$15,590 has been made by the Winnipeg city council to the General Hospital. The grant is intended to make up the deficit in last year's maintenance fund.

ALBERTA

The sum of \$15,000 has been granted to the Calgary Hospital board to meet current expenses until the estimates are passed.

A GRANT of \$14,000 has been made by the city council of Medicine Hat towards hospital improvements, and \$5,000 has been granted for current expenses.

SMALLPOX is reported from the hamlet of Bowell, near Medicine Hat.

SASKATCHEWAN

THE necessity of increasing the hospital accommodation in Moose Jaw was brought up at an informal meeting of the Hospital Board and the Moose Jaw Medical Association on May 28th.

THE increased cost of maintenance has compelled the authorities of the Regina General Hospital to increase the fees charged to patients. The charges made in future will be: private wards, \$3.50 a day; semi-private wards, \$2 and \$2.50 a day; public wards, patients resident in Regina, \$1.50 a day, non-resident patients, \$1.75. A charge of \$2.50 will also be made for maternity cases. The plans

for the new nurses' home have been modified to meet the estimated cost. This will make a difference of eighteen rooms.

THE formal opening of the Hugh Waddell Memorial Hospital at Canora took place June 18th. The hospital was built by Mrs. Waddell in memory of her husband, the late Mr. Hugh Waddell, of Peterborough, on a site given by Mr. C. R. Graham, of Winnipeg. The hospital has a capacity of thirty-eight beds. It has been open to receive patients since March 16th, and about thirty-four admissions have been made. Dr. E. H. Gray is the medical superintendent.

BRITISH COLUMBIA

THE new Royal Columbian Hospital at New Westminster was formally opened May 29th.

DR. J. W. McINTOSH, of Vancouver, has been appointed associate professor of chemistry and acting head of the department in the University of British Columbia.

A WING is to be added to the Chilliwack Hospital. It is estimated that the new building will cost about six thousand dollars.

MEDICAL COLLEGES

McGill University

THE Annual Convocation for conferring degrees in medicine took place on Tuesday, June 9th, when the degree of M.D., C.M., was conferred on the following:

Alan Fenton Argue, B.A., Carp, Ont., Douglas James Barclay, New Westminster; Henry Douglas Bayne, St. Michael, Barbados; Walter Aloysius Brown, Moncton, N.B., Donald Ernest Howell, Cleveland, Victoria; Ernest Buchanan Convery, Montreal West; Albert Joseph Couillard, B.A., Ottawa; Filmer Engers Coy, Vancouver; William Guy Dalpé, Montreal; Harry Aylwin Dover, Ottawa, Ont., Millard James Fillmore, Advocate Harbour, N.S.; Arthur Maxwell Fisher, Woodstock, N.B.; George Alexander Fleet, Montreal; Joseph Francis Gallagher, Bangor, Me.; David Hartin, Neslon, B.C.; Isadore Benjamin Hirshberg, Bay City, Mich.; Lionel Charles Hutson, White Park, Barbados; Abraham Bernard Illievitz, Montreal; Marcus Lorne Jewett, Central Keswick Ridge, N.B.; Curtis Daniel Johnston, Southfield, Jamaica; Arthur Llewelyn

Jones, Victoria; Bert Logan Jones, Sprague, Washington; Cecil Roy Joyce, Woodstock, Ont; Alfred Edward King, Waltham, Mass.; James Carrel Lee, Quebec; Theodore Howston Lennie, New Westminster; Thomas John Luby, Meriden, Conn.; Arthur Edward London, Canterbury, N.B.; Charles Titcomb London, Canterbury, N.B.; Aden Floyd MacIntosh, Dundela, Ont.; Henry Hector MacKenzie, New Westminster; Edward Halton Mason, Ph.B., Providence, R.I.; Gerald Carlton Melhado, Old Harbour, Jamaica; David Louis Mendel, Montreal; William Alexander Moore, Kaslo, B.C.; Charles Richard Llewellyn Morgan, Hamilton; Ernest Mariett Morris, A.B., Fall River, Mass.; Duncan Arnold Morrison, Maxville, Ont.; Edward Vincent Murphy, A.B. (Holy Cross), Fall River, Mass.; Hugh Roy Mustard, Victoria; James Samuel Myers, M.D., Runaway Bay, Jamaica; Leslie Gladstone Pearce, Brantford, Ont.; John Wilmer Peck, Seaforth, Ont.; John M. Pollock, Berwick, Ont.; Clarence Frederick Carson Powles, Montreal; Ramsay David Rankin, Stratford, Ont.; Charles Waymond Reeves, Sault Ste. Marie, Mich.; Charles Douglas Robbins, Yarmouth, N.S.; Lawrence Hamilton Roberts, B.A., Ottawa East, Ont.; Keith Forrester Rogers, Yarmouth, N.S.; Albert Ross, B.A., Blue Mountain, N.S.; William Wallace Ruddick, St. John, N.B.; William Clifford Munsell Scott, Ottawa; Robert Cameron Stewart, B.Sc., Quebec; Walter Frederick Taylor, Charlottetown; Frank Wendell Tidmarsh, Charlottetown; Douglas Waterston, B.A., Westmount, Que.; John Cuthbert Wickham, B.A., St. Lambert, Que.; David Edwin Wiley, Andover, N.B.; Thomas Geddes Wilson, Wingham, Ont.; Eric Charles Harvey Windeler, Hazel Hill, N.S.; Henry Pultenay Wright, B.A., (Bishop's) Ottawa.

The Medalists are: *Holmes' Gold Medal* for highest aggregate in all subjects forming the medical curriculum: C. R. Joyce, Woodstock, Ont.

Final Prize for highest aggregate in the Fifth Year Subjects: L. G. Pearce, Brantford, Ont.

Wood Gold Medal for best examination in all Clinical Branches: A. L. Jones, Victoria.

McGill Medical Society's Senior Prize: G. A. Fleet, Montreal.

The following is the list of prizemen in the first four years:

First Year

Prizeman, R. H. MacLauchlan, Calgary, Alberta.

Junior Anatomy Prize, J. R. Dean, Clarenceville, Que.

Second Year

Prizeman, H. A. Des Brisay, Vancouver.

Senior Anatomy Prize, H. A. Des Brisay, Vancouver.

Medical Society Junior Prize, A. Bissember, Berbice, British Guiana.

Third Year

Prizeman, N. M. Guieu, Ottawa,

Sutherland Medallist, Louis Gross, Montreal.

Morley Drake Prize, N. M. Guieu, Ottawa.

Fourth Year

Prizeman, J. A. Urquhart, Revelstoke, B.C.

The Joseph Hils Prize, H. L. Moffatt, Rialto, California.

The *ad eundem* degree was conferred on the following graduates of Bishop's College: John Francis, Maximilian Goltman, and Albert F. Longeway.

Dr. Victor Neil MacKay of Halifax, N.S., received the *Diploma of Public Health*.

The Honorary Degree of LL.D. was conferred upon Sir William Leishman.

The following are the changes in the staff for the coming session:

Dr. L. J. Rhea has been appointed Associate Professor of Pathology.

G. R. Mines, M.A., has been appointed the Joseph Morley Drake Professor of Physiology.

Dr. R. F. Miller, who has been in charge of the Department of Physiology for the past session has resigned to accept an appointment to the Chair of Physiology in Western University, London, Ont.

Dr. O. C. Gruner, Assistant Professor of Pathology, has resigned from the post and returned to England.

The post-graduate courses given during the first two weeks of June were attended by twenty-five graduates, an unusually large number.

Alberta University

THE autumn examinations for those wishing to obtain license to practise in Alberta will begin on September 15th, and will be held at the University of Alberta, Edmonton South, Alta. Applications, with examination fee of \$50, matriculation certificate, and graduation diploma must be in the hands of the Registrar, University of Alberta, on or before August 15th. Proper application blanks and further information may be obtained upon request.

Dalhousie University

The medical faculty is mourning the death of the young professor of pathology, Dr. Murdock Alexander Lindsay, who lost his life in the disaster to the S.S. *Empress of Ireland* on May 29th. The circumstances in this instance are particularly sad for Dr. Lindsay was on his way to England to be married. Murdock Alexander Lindsay, who was in his thirty-second year, was educated at the Halifax Academy, and later took his B.Sc. degree at Dalhousie University. He spent two years in the Halifax Medical College and then three years at the University of Edinburgh, where he graduated M.B., Ch.B., in 1908. He took several class prizes and medals during his university course, and had clinical experience in the Royal Infirmary, Edinburgh, and in Liverpool and Leeds. During the winter of 1910-11, Dr. Lindsay acted as assistant pathologist at the General Hospital in Birmingham, where he gained much experience. Returning to his native city of Halifax in 1911, he was appointed pathologist to the Victoria General Hospital and also professor of pathology in the newly instituted faculty of medicine of Dalhousie University. This spring he had just completed the installing of his department in the new building at the hospital, the planning of which had given him much thought.

Dr. Lindsay was a prominent figure in several kinds of athletics, Rugby football, foot racing, and latterly tennis. The faculty of medicine will miss him as an excellent teacher, the medical profession in this city as one ever ready to help in all the details of pathological diagnosis, he will be missed from the hospital, he will be missed from the Club. The funeral on June 2nd was one of the largest in Halifax for many years. To his mother, to his uncle, Dr. W. A. H. Lindsay, and to her on whom the blow falls with peculiar cruelty, the sympathy of the Medical Faculty is very sincerely tendered.

Toronto University

The following is the list of graduates in medicine:

Degree with Honours: Group 1., Macklin, C. C.; Group 2, Detweiler, H. K.; Group 3, Eberhart, F. L.

Medals: Detweiler, H. K., Gold; Hewitt, S. R. D., 1st Silver; McKenzie, K. G., 2nd Silver; Brown, H. E., 3rd Silver.

Chappell Prize in Clinical Surgery: Detweiler, H. K.

Pass:—G. C. Anglin, C. C. Ballantyne, A. F. Bastedo, J. R. Beaven, G. E. Binkley, J. E. Bond, J. M. Bremner, R. J. W. Brooke,

H. H. Burnham, G. L. Caldwell, K. W. Cameron, W. A. Cardwell, H. Clarke, E. J. Clifford, R. E. Coleman, H. R. Conn, L. H. Cook, R. Coutts, R. E. Crane, W. W. Cross, O. J. Day, T. G. H. Drake, J. A. Duck, F. M. Dure, G. M. Flock, G. S. Foulds, C. T. Galbraith, W. J. Gardiner, G. C. Gliddon, T. F. Graham, B. L. Guyatt, W. Hamilton, R. E. Hartry, J. N. Humphrey, H. B. Jeffs, J. E. Knox, O. J. S. Little, W. T. Little, F. G. Mack, H. S. Martin, J. C. Maynard, J. E. McCorvie, W. V. McIntosh, H. R. Macintyre, H. A. McKay, R. D. MacKenzie, W. W. McKenzie, A. E. McKibbin, W. J. McLean, E. A. McQuade, L. C. Palmer, A. A. Parker, M. H. Paterson, D. A. Quick, W. R. Reeds, E. F. Risdon, D. E. Ross, W. E. Sinclair, R. F. Slater, R. S. Smith, J. M. Stewart, R. G. Struthers, E. C. Syer, A. Taylor, W. L. Tyrer, W. V. Watson, H. A. Wolverton, C. S. Wynne.

In the fourth year the following have passed with special proficiency:

R. I. Harris, G. M. Dale, W. R. Hodge, D. E. S. Wishart, R. H. Fraser, C. R. B. Crompton.

In the third year those who have obtained honours are:

Anatomy: N. A. Wallace.

Physiology: N. A. Wallace, H. B. Maitland, R. M. Janes.

Pharmacology, N. A. Wallace, G. A. Davis, H. B. Maitland, W. P. McCowan, W. C. Givens, Miss O. G. Patterson.

Passed with special proficiency: N. A. Wallace, F. M. Johnson, H. B. Maitland.

In the second year scholarships have been won by: 1st, B. S. Cornell; 2nd, A. M. Jeffrey.

Passed with special proficiency: B. S. Cornell, A. M. Jeffrey, I. Erb.

In the first year the winners of scholarships are: 1st, R. B. Hare; 2nd, G. H. Agnew.

Passed with special proficiency: R. B. Hare, G. H. Agnew, D. M. Low, G. R. D. Farmer, R. W. Rankin, R. J. Spence, R. Davis, and N. E. McKinnon.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canadian Journal of Medicine and Surgery, June, 1914:

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|---|--------------------------------------|
| Diagnosis of surgical diseases of the
kidney | C. H. Gilmour and
W. A. Cerswell. |
| Socrates on Aesculapius and the Aescu-
lapians | M. Hutton. |
| The family physician and public health | G. Chambers. |

The Canada Lancet, June, 1914:

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|---|--------------------|
| Presidential address at the Ontario
Medical Association, Toronto, 26th
June | C. F. McGillivray. |
| A case of syphilitic splenomegaly re-
sembling Banti's disease | H. B. Anderson. |
| The value of radium in malignant
gynæcological conditions | W. H. B. Aikins. |

Dominion Medical Monthly, June, 1914:

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| Points in the diagnosis and treatment
of syphilis | H. B. Anderson. |
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Western Canada Medical Journal, May, 1914:

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|---|--------------|
| Our present physical knowledge of
X-rays | W. P. Davey. |
|---|--------------|

Le Bulletin Médical de Québec, May, 1914:

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| Enuresie: Causes et traitement | F. Dubé and A.
Martin. |
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L'Union Médicale du Canada, June, 1914:

- | | |
|---|---------------|
| Rapport sur la vaccination antityphique
à Saint-Jean d'Iberville | E. P. Benoit, |
| Quelques observations sur la contagion
par la tuberculose | J. Kennedy. |

Medical Societies

WINNIPEG GENERAL HOSPITAL

THE usual monthly clinic was held on Monday, April 6th, at 8.30 p.m., when the following programme was presented. Dr. Munroe, case for diagnosis. Dr. Pierce, (1) Adrenals from case of Addison's disease, (2) Diaphragmatic hernia. Dr. Lehmann, (1) Tuberculosis of kidney, (2) Chondroma of thorax, (3) Syphilitic cases, (4) For diagnosis. Dr. Hiebert, abscess of lung. Dr. Moody, disseminated sclerosis.

SOCIETIES FOR MENTAL HYGIENE

THE first convention of Societies for Mental Hygiene was held under the auspices of the National Committee for Mental Hygiene at Osler Hall, Baltimore, on Monday, May 25th. In the afternoon the opening address was given by Dr. Stewart Paton, and was followed by an address by Dr. Thomas W. Salmon on the "Foundations for successful work by State societies and committees for mental hygiene." The remainder of the afternoon was taken up by informal talks and discussions. In the evening, an address was given by Dr. Lewellys F. Barker, president of the National Committee for Mental Hygiene. Other papers were read by Miss Julia C. Lathrop, Hon. George P. McLean, and Dr. William H. Welch.

The following day, May 26th, the opening of the seventieth annual meeting of the American Medico-Psychological Association took place.

ONTARIO COUNTY MEDICAL HEALTH OFFICERS

THE regular monthly meeting of the Ontario County Medical Health Officers took place in the Assembly Hall of the Chatham Public Library, April 16th. An interesting paper was read by Dr. Thompson, the Dominion government inspector at the Chatham abbatoir, and was followed by a general discussion in which Drs. McKeough, Bray, Musson, Hall, McCall, and Bentley participated.

MANITOBA MEDICAL ASSOCIATION

The seventh annual convention of the Manitoba Medical Association was held in the medical library of the University of Manitoba on June 2nd, 3rd and 4th, under the presidency of Dr. Jasper Halpenny. The conference was a most successful one, about eighty members and fifty visiting physicians being in attendance. The chair was taken by Dr. O. Bjornson and the opening address was delivered by the president, who chose for his subject, "Medical Education." Dr. Halpenny was of opinion that under certain circumstances—for instance, when a man is struggling to put himself through college—it is rather a waste of time to take an Arts course before entering upon the study of medicine; he thought, however, that before long the University of Manitoba would require a student to take at least two years in Arts before commencing his medical studies. Speaking of the curriculum, Dr. Halpenny thought that during the first two years in medicine too much time was given to anatomy, and that during the fourth and fifth years the tendency to specialize was rather too marked. He advised all graduates to spend from one to three years in hospital work before going into practice.

The presidential address was followed by a paper on "Laparotomy (non-obstetrical) during pregnancy," by Dr. Archibald Maclaren, of St. Paul, Minnesota. The results of thirty-five cases were cited by Dr. Maclaren, whose address was much appreciated and provoked a lively discussion. Dr. S. J. S. Pierce spoke on the subject of anti-typhoid vaccination, and Dr. Edith Brown, dean of the Medical College, Punjaub, India, gave a short address on medical work in India.

On Wednesday morning a clinical meeting was held at the Winnipeg General Hospital, after which those in attendance at the conference motored to Assiniboine Park for luncheon. Several interesting addresses were given in the afternoon of Wednesday and Thursday, and clinics were again held at the General Hospital on Thursday morning.

The officers elected for the year 1914-15 are: president, Dr. H. A. Gordon, Portage La Prairie; vice-presidents, Dr. A. P. McKinnon and Dr. Walkey, Portage La Prairie; honorary secretary, Dr. R. B. Mitchell; honorary treasurer, Dr. J. A. Gunn; executive, Dr. Gibbs, Selkirk, Dr. Bigelow, Brandon, Dr. Andrew, Minnedosa, Dr. Keele, Portage La Prairie, and Dr. Cohoe, Pilot Mound.

The following resolution was passed unanimously:

"Whereas, on account of the virulence and endemic existence of typhoid fever in our prairie provinces, with so much consequent suffering, loss of function and of life itself, and, while appreciating as we do all efforts to eradicate the disease by correct sanitation, extermination of flies, etc., yet the success that has attended the use of anti-typhoid vaccine in our hospitals and armies has been so marked that it has long since passed the experimental stage, having proved more effectual than the vaccine of Jenner against smallpox.

"Therefore, be it resolved that this convention urge upon every physician in our membership by precept and example the introduction of this vaccine in private practice, and the adoption of compulsory inoculation wherever large gangs of men are forced to work under unfavourable conditions."

Dr. Halpenny and those who so ably assisted him are to be congratulated upon the success of the meetings.

ONTARIO MEDICAL ASSOCIATION

THE thirty-fourth annual meeting of the Ontario Medical Association was held in Toronto, May 26th, 27th and 28th. An excellent programme, which was chiefly clinical, was presented, the sessions being held in the various hospitals of the city as well as in the Medical Building of the university.

On Tuesday morning, May 26th, the medical and surgical sections met, when the following papers were read:

"Case of tetanus treated by carbolic acid, with recovery," Dr. J. T. Fotheringham; "Artificial pneumothorax in the treatment of tuberculosis," Dr. C. D. Parfitt; "Vincent's angina, reports of cases," Drs. P. Goldsmith, D. Gibb Wishart, and Brefney O'Reilly; "Syphilitic splenomegaly simulating Banti's disease," Dr. H. B. Anderson; "Case of Splenectomy in Banti's disease," Dr. J. S. N. Magwood; "Acute intestinal obstruction," Dr. F. N. G. Starr; "Cardiospasm, with exhibition of two cases," Dr. J. K. McGregor, "Some complications in hysterectomy for fibroids," Dr. N. A. Powell.

At the opening of the afternoon session the president, Dr. C. F. McGillivray, of Whitby, delivered his address, in which he dealt admirably with the important questions before the profession in Ontario. The address opened with an appreciation of the country practitioner and the wide range of his beneficent activities. Touching tributes were paid to the memory of Drs. Fenton and Caven

whose loss has been keenly felt. After contrasting the qualifications of the regular and irregular practitioner, the president warmly endorsed the proposal of Sir James Whitney that a government commission be appointed to go into the whole question of medical practice. Three questions would have to be settled by such a commission,—what was meant by the practice of medicine, the primary education required before entering upon the study of medicine, and the technical education required after the study of medicine has been begun.

There was but one way of dealing with the problem of quackery and faddism, and that was to set a high standard and require all to come up to it. The faddists would soon disappear, if they were required to spend five years in study and pass examinations of a stringent kind. The government should co-operate with the medical profession in bringing this about.

On the relations of the Ontario to the Canadian Association Dr. McGillivray spoke as follows: "In the official programme which you have in your hands you will see that notice of motion has been given for the separation of this association from the Canadian Medical Association. The provincial association of Ontario was the first to affiliate with the national association, and all the other provinces, with the exception of Quebec, have followed her good example. Is Ontario to be the first to separate, and will the other provinces follow her bad example? President after president of yours in his annual address has urged the formation of city and county associations all over the province, and that such associations become affiliated with the provincial association, just as the provincial associations are affiliated with the national, and further, that membership in the city and county associations would entitle to membership in the provincial association, just as membership in the provincial association would entitle to membership in the national. Thus the various medical associations of the whole Dominion would be cemented together by bonds of common interest. The whole scheme will be guillotined if this association approves of the motion of separation, of which notice has been given. We do not disagree with the advocates of separation, who say that affiliation has worked in some respects to the disadvantage of the association, but surely there have been some compensating advantages; if our agreement with the national association, made at the time of affiliation, has worked to our disadvantage, if we have grievances, as I believe we have, if we have suffered in the loss of our annual meetings of 1910 and 1913, and also in our financial arrangements, as claimed

surely those grievances can be remedied without recourse to such drastic measures as separation. The whole question will be before you this afternoon for discussion. Let wise and sane counsels prevail. If permitted to make a suggestion, I would suggest that prudent representatives from both associations be appointed, that they meet, adjust their differences, make a new agreement if deemed wise, and report to their several associations for approval at the first possible opportunity. But, whatever you do, don't to-day approve of a motion of separation. Ever remember that the friends of the one association are the friends of the other."

The President then paid a tribute to the splendid work done by the Hon. Mr. W. J. Hanna at the provincial hospitals for the insane, and to the advanced step in the treatment of the mentally afflicted being taken by the thorough scientific and therapeutic equipment of the new provincial Hospital for the Insane at Whitby. The change in the treatment of the insane was one of the most encouraging signs of the times. Inmates were no longer treated as dangerous prisoners to be confined by barred windows. With advanced methods they were now cared for as hospital patients. Restraint had been dispensed with, and one result was that large numbers of mildly afflicted persons who were being brought to the institutions for treatment and cure, where under the old system their shrinking from asylums kept them at home until the disease had become aggravated.

Dr. McGillivray urged the doctors to keep up their agitation for consideration in the Workmen's Compensation Act. The medical men had a right to a proper guarantee of remuneration for their services, and although the Act would go into force without such provision, the matter was a long way from being finally settled.

Following the president's address and a symposium on syphilis, to which Drs. J. A. Fordyce and Arthur Ellis, of New York, and Dr. J. W. S. McCullough contributed valuable papers, a well attended business meeting was held. The action which was taken on the important proposal that "the affiliation between the Ontario Medical Association and the Canadian Medical Association, in its present form, be discontinued," was fully reported in the last issue of the JOURNAL (page 517). The president's advice was followed; the motion was withdrawn, and amending motions appointing a committee to whom the matter is referred were carried without dissent. The question of the affiliation of the county societies was referred to the executive. Among the reports of committees presented, that of the Committee on Fees contained the following recommend-

ation: "That a standing committee of this Association be formed for the purpose of considering from time to time, the question of fees in all its bearings, with a view to safeguarding the interests of the public and the profession and making such recommendations for changes or re-adjustments as may be deemed advisable and the adoption of which will carry the approval of this representative body of the profession." The two following resolutions were also carried: moved by Dr. Harley Smith, seconded by Dr. W. A. Young, "That there be formed a Standing Committee on Resolutions, to which shall be referred all resolutions that any member may desire to bring before the Association." Moved by Dr. B. L. Riordan, seconded by Dr. J. F. Uren, "That this Association request the Government of the Province of Ontario that the Act entitled 'Compensation for Employees by Employers for injury or industrial diseases sustained while following their occupation', be amended so as to provide for the payment of first aid in such cases by registered practitioners for a period not to exceed six weeks, the fees for services rendered to be passed on by the Commission on the accounts being presented to them in detail, such accounts to be paid out of the funds of the Commission."

At the evening session Dr. B. P. Watson gave the address in obstetrics and Dr. Finney, professor of clinical surgery in Johns Hopkins University, the address in surgery, which was entitled "The cause of failure in operations for cholelithiasis."

Wednesday morning was spent at the General and the Sick Children's hospitals, where clinics were held and operations performed. In the afternoon Dr. E. Libman, of Mt. Sinai Hospital, New York, delivered the medical address on "Subacute bacterial endocarditis." Dr. Libman brought with him, and exhibited throughout the meeting, a remarkable series of pathological specimens illustrating this subject, upon which his investigations have shed much light. The nominating committee then brought in their report as follows: place of meeting, 1915, Peterborough. President, D. Gibb Wishart; first vice-president, A. T. Shillington; second, J. T. I. Halliday; third, J. A. Marquis; fourth, Francis Williams; secretary, F. Arnold Clarkson; treasurer, J. H. Elliott; delegates to the executive council of the Canadian Medical Association; H. B. Anderson, A. T. Shillington and Ingersoll Olmsted. The new president was then installed.

Thursday morning was spent at Grace, St. Michael's and the Western hospitals, and the afternoon at the Woodbine where the members were the guests of the Ontario Jockey Club.

The Canadian Medical Association

Annual Meeting, 1914, St. John, N.B., July 7th, 8th, 9th and 10th

MEMBERS OF THE EXECUTIVE COUNCIL

F. P. Drake, London.	F. N. G. Starr, Toronto.
W. W. White, St. John.	A. I. Mader, Halifax.
Alex. Primrose, Toronto.	R. G. Brett, Banff.
R. MacNeill, Charlottetown.	John Park, Edmonton.
H. B. Small, Ottawa.	J. Alex. Hutchison, Montreal.
J. G. Adami, Montreal.	W. A. Thomson, Regina.
J. Halpenny, Winnipeg.	R. A. Reeve, Toronto.

R. E. McKechnie, Vancouver.

Place of Meeting, 1914—St. John, N.B.

Honorary President—Sir Thomas Roddick, Montreal.

President—H. A. McCallum, London, Ont.

President-elect—Murray McLaren, St. John.

Local Secretary—J. S. Bentley, St. John, N.B.

Vice-Presidents—Presidents of Affiliated Societies and the Presidents of Provincial Societies *ex-officio*.

Secretary-Treasurer—W. W. Francis, 836 University St., Montreal.

Local Secretaries are the Secretaries of Affiliated Societies and the Secretaries of Provincial Societies *ex-officio*.

FINANCE COMMITTEE

J. G. Adami, Chairman, Montreal.	H. B. Small, Ottawa.
W. W. White, St. John.	R. A. Reeve, Toronto.
F. N. G. Starr, Toronto.	J. Alex. Hutchison, Montreal.

COMMITTEE ON MEDICAL LEGISLATION

A. T. Shillington, Ottawa (with power to add).

MILK COMMISSION

Chairman, Chas. J. Hastings, Toronto.

Secretary, J. H. Elliott, 611 Spadina Ave., Toronto.

AMENDMENTS TO CONSTITUTION AND BY-LAWS

H. B. Small, Ottawa, Chairman (with power to add).

REPORTS OF OFFICERS

J. Halpenny, Winnipeg (with power to add).

NECROLOGY

J. H. Elliott, Toronto (with power to add).

COMMITTEE ON MEDICAL EDUCATION

R. A. Reeve, Toronto, Chairman (with power to add).

EDITOR

Andrew Macphail, 216 Peel St., Montreal.

Assistant to the Editor, W. W. Francis, 836 University St., Montreal.

Medical Societies

- CANADIAN MEDICAL ASSOCIATION:**—President—Dr. H. A. McCallum, London, Ont. President-elect—Dr. Murray MacLaren, St. John, N.B. Secretary-treasurer—Dr. W. W. Francis, 836 University Street, Montreal.
Annual Meeting, St. John, N.B., July 7th, 8th, 9th and 10th, 1914.
- ACADEMY OF MEDICINE, TORONTO:**—President—Dr. H. B. Anderson. Secretary—Dr. J. H. Elliot.
- ALBERTA MEDICAL ASSOCIATION:**—President—Dr. C. E. SMYTH. Secretary—Dr. F. W. Gershaw.
- ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:**—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.
- BRITISH COLUMBIA MEDICAL ASSOCIATION:**—President—Dr. J. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.
Annual meeting, Vancouver, June 19th and 20th, 1914.
- CALGARY MEDICAL SOCIETY:**—President—Dr. G. Johnston. Secretary—Dr. J. L. Allen.
- CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:**—President—Dr. J. G. Adami, Montreal. Secretary—Dr. George D. Porter, Ottawa.
Annual meeting, Halifax, July 13th and 14th, 1914.
- CANADIAN HOSPITAL ASSOCIATION:**—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. N. E. Brown, Toronto.
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The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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Medical literature, during the last few years, has recorded many specific instances of the remarkable blood-forming power of Sanatogen.

A striking illustration of this fact is furnished in the accompanying diagram, based on observations made by Dr. Starkloff, of the Consumption Sanatorium, Belzig, and published in *Zeitschrift für Tuberkulose*, No. 6, 1911.

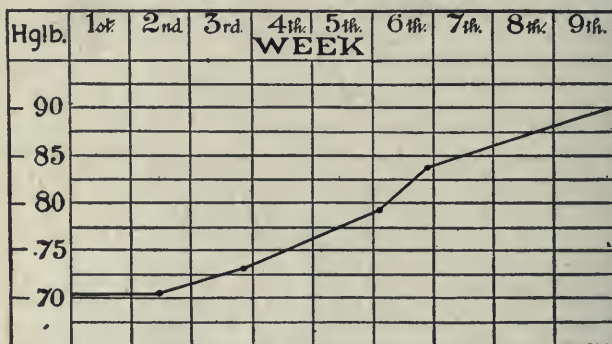
The diagram shows the average increase in the hæmoglobin content of

the blood during nine weeks, based on the analyses of thirteen patients.

It proves that during the whole period—from the middle of the second week, when the influence of Sanatogen began to make itself felt, until the end of the ninth week, when the administration of the preparation was discontinued—there was an uninterrupted rise in the hæmoglobin value from about 71 per cent. to 90 per cent., or, roughly, 20 per cent. for the period.

AVERAGE HAEMOGLOBIN INCREASE

from Observations made by Dr. Starkloff at the Consumption Sanatorium, Belzig.



Conclusive as is the evidence furnished by the diagram, its importance is considerably emphasised by similar results recorded in English periodical literature.

Thus, in *The General Practitioner*, the author of an article records the following cases: (1) A girl of 17 was suffering from right supra-orbital neuralgia of considerable intensity. The red corpuscles numbered 3,900,000 per c.mm. and the hæmoglobin value was 40 per cent. She took Sanatogen for twenty-one days, when her red corpuscles numbered 4,200,000 per c.mm. and the hæmoglobin had risen to 56 per cent. She made a quick recovery.

(2) A fair-haired girl, aged 12, suffering from a fourth attack of chorea, showed red corpuscles numbering 3,600,000 per c.mm., with hæmoglobin 49 per cent. At the end of a month

the red corpuscles numbered 4,500,000 per c.mm., the hæmoglobin 55 per cent., and the choreic movements had entirely disappeared.

Again, in *The Medical Press and Circular*, the writer of an article records this case:—

A woman, suffering from melancholia, who took to her bed after sustaining a severe shock from the sudden loss of her favourite child, showed red corpuscles numbering 3,800,000 per c.mm., with hæmoglobin 48 per cent. At the end of a fortnight's treatment with Sanatogen, her red cells had risen to 4,000,000 per c.mm. and hæmoglobin to 52 per cent. Her mental equilibrium was restored and she was able to resume her home duties. The physician recording the case states: "The improvement in this case was most striking and suggestive."

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The Canadian Medical Association Journal

VOL. IV.

AUGUST, 1914

No. 8

THE RELATION OF THEORY AND PRACTICE IN THE OPERATIVE TREATMENT OF GENITAL PROLAPSE

BY HENRY JELLETT, M.D., F.R.C.P.I.

Master, Rotunda Hospital, Dublin

MY first duty is to thank you for the great honour which you have done to the Irish school of medicine, and to that branch of it which is represented by the Rotunda Hospital, in inviting me to deliver this address. I can only say that I know the honour is appreciated by all connected with the Dublin school of obstetrics and gynæcology. I have next to thank you on my own account, and to express my pleasure at the great honour which you have done me personally. I cannot tell you how great a pleasure it is to me to have been able to come to this great country, even though the shortness of my visit enables me to see only the fringe of it. Already, I know that I shall carry back the very pleasantest recollections, and I can only hope that I shall leave some pleasant recollections behind.

The subject which I propose to take as the basis of my address is one which has interested me for a number of years, and which must have the greatest interest for every operating gynæcologist, namely, "The relation of theory and practice in the operative treatment of genital prolapse." It is a subject on which a volume might be written, and yet it has not always received the close attention of the operator. I think there are few subjects in operative gynæcology in which men are more inclined to be led by the

Address in Obstetrics, given at the annual meeting of the Canadian Medical Association, St. John, N.B., July 8th, 1914.

fashion of the moment, and to adopt such fashion without due consideration of its ultimate results, and without attaching sufficient importance to its anatomical effects.

I trust I have not infringed the spirit of my directions which were to deliver an address on obstetrics. Personally, I regard obstetrics and gynæcology as more or less conjoined, but my inclinations lie more in the direction of gynæcological practice. I have therefore assumed that I may translate the word obstetrics in its freest sense. Even if one wishes to divorce gynæcology from obstetrics one can say of the subject I have chosen, that although prolapse may be cured by the gynæcologist, it is, alas, often produced by the obstetrician.

I think that in the past the frequent failure of the operative treatment of prolapse has been due to two causes. The first of these is an insufficient anatomical knowledge of the relations and supports of the uterus and the second is a desire to find a panacea which will be suitable for every case. The second cause is directly the result of the first. One can quite understand, for instance, how the routine treatment of uterine prolapse by ventral fixation appeals to one who does not recognise the abnormal strain to which a uterus once prolapsed is subjected in the future, and similarly one can understand the attitude of those who habitually recommend hysterectomy on the one hand, or extensive vaginal plastic operations—such as colporrhaphy and perineorrhaphy—on the other. It is such an obvious truism that if one removes the uterus, it can no longer become prolapsed, that it is little wonder some gynæcologists consider hysterectomy can cure prolapse. Again, it is so obvious that a prolapsed uterus ought to descend through the vagina, and cannot do so if the vagina is markedly narrowed that it is not strange that other gynæcologists think colporrhaphy and perineorrhaphy alone can cure prolapse. While as to ventral fixation, what is more plausible than to think that once the fundus of the uterus is fastened in an irremovable position to the abdominal wall, by no possibility can prolapse occur again? Yet each of these reasonings is based on fallacy. The extirpated uterus has prolapsed once and for all, and is gone, but that does not prevent subsequent prolapse of the vagina, and genital prolapse does not consist of prolapse of the uterus alone. Descent of the uterus through the vagina can be prevented by a narrowing plastic operation, but that does not prevent the vagina as a whole from becoming inverted. The fundus of the uterus can be moored permanently to the abdominal wall, but that does not prevent the

uterus elongating until its cervix and the vagina again appear outside the vulva. One might multiply other examples, but there is no need.

There are two cardinal points that one must remember in considering the treatment of prolapse. The first is that the exact lesions present differ to a very material extent in different cases. The second is that any treatment to be successful must follow such lines as enable us to alter and modify its details in order to suit the special lesions and complications of each individual case. I here show you on the screen a diagram which illustrates what I mean. Each and every one of these conditions will come under the head of genital prolapse, with the exception, perhaps, of the case of simple vaginal hypertrophy of the cervix. Here, although the cervix may appear at or outside the vulva, still the condition is not primarily prolapse, but one is justified in regarding all the other conditions as phases or varieties of prolapse, each of which will require differences in its operative treatment. With these points in mind, we come to the bed rock of all operative measures, namely, the anatomy of the pelvis, and when we understand it thoroughly, we shall perhaps be in a suitable position to criticise older methods, or even to devise new ones.

I begin, therefore, by calling your attention to certain points of importance in the physiological support of the uterus and vagina, and I do it in the shortest manner possible. In one respect I ask you to give me your consideration. There is a considerable amount of divergence of opinion in regard to many of the points which I bring before you, and I ask you to remember that, as time will not permit of a discussion of these differences, I bring before you what I regard as facts, and what are my own deductions from them. It is no wonder that much divergence of opinion exists in regard to matters which at first sight appear to be so very capable of direct proof. There is no one so coy as the anatomist who comes to deal with pelvic anatomy, and the reason is not far to seek. I understand that the intelligent anatomist who is a good dissector can demonstrate to his own satisfaction, and to the satisfaction of his audience, practically any ligament or structure in the pelvis that he chooses for the moment to create. He can harden connective tissue with formalin and turn it into ligaments; he can exhibit muscles which in the living are incapable of demonstration; and he can resolve strong fibrous bands into succulent connective tissue. I hope my audience will not think from this that I want to undervalue the work which has been done in pelvic anatomy. It is far from me

to desire to do any such thing, but I want to impress on you the great difficulty, if not impossibility, of demonstrating in the dissecting room subject the relations and structures of the pelvic floor as they are found in the living, and especially as they are found when modified as a result of the injuries of labour. The knowledge of anatomy is essential to the treatment of prolapse, but it is a knowledge which must be gained not alone in the dissecting room, but in examination of the living.

The two organs which are primarily concerned in genital prolapse are the vagina and the uterus, while secondarily, we find that prolapse of the bladder is very common, and that prolapse of the rectum sometimes occurs.

The vagina, under normal conditions, is kept in place by three different structures. First, it is supported below by the converging bands of the levator ani muscle, with the coincident help of the investing fascia. Secondly, it is fixed to the pelvic wall by the vaginal suspensory ligament, which is a fold of the pelvic fascia usually described as springing from the pelvic wall in the neighbourhood of the ischiatic spine, and passing inward and slightly forward to the side of the vagina, and slightly posterior to a coronal median plane. I do not think, however, that this description is quite accurate. Thirdly, it is supported by its attachments to the cervix, and by the parts of the endo-pelvic fascia which have an insertion both into the cervix and into the upper part of the vagina.

The uterus is supported, I refer now to direct support, by its vaginal attachment, by the uterosacral ligaments, and by the different layers of the endopelvic fascia which pass into it laterally and anteriorly. Its indirect support I will discuss in a moment.

Each one of these structures which I have mentioned can be demonstrated clinically, and can be definitely proved by any close observer to be responsible for the uterovaginal support. It is an easy matter to recognise the relation of the levator ani muscle to the lower part of the vagina, and to see how the approximation of its lateral bands supports both the perineum and the lateral vaginal walls. The suspensory vaginal ligaments are also capable of easy demonstration, and so are the uterosacral ligaments. To demonstrate them, one finger is passed into the rectum, and a bullet forceps is applied to the point of the vagina or uterus at which one wants to demonstrate the ligamentous attachment. Suppose, for instance, the forceps first catches the cervix. As one draws it down, one feels the uterosacral ligaments become tense at each

side, until finally their tension is sufficient to resist further descent of the cervix. If one then applies a second forceps to the upper part of the vaginal wall at the junction of the lateral and posterior wall and pulls upon it, the finger in the rectum will feel distinctly the fascial band which runs to that particular point becoming tense. If the forceps is then applied successively to a number of different points lower in the vagina, and on the posterior wall, and traction is made on each in turn, one can demonstrate that, beginning above at the uterosacral ligaments, and ending below about where the levator muscle crosses the vagina, there is a practically continuous ligamentous connexion between the cervix and the posterior vaginal wall, and the posterior pelvic wall, and that this band is sufficiently strong to prevent more than a certain amount of displacement of the cervix or vagina by traction. The position of this band is shown approximately in the next slide, which represents an illustration taken from Cunningham's "Anatomy." I say approximately, because it appears to me to run in too transverse a direction, and I think that anyone who examines the attachments for himself as I have described will have no difficulty in proving that it really runs in a more posterior direction. If the pelvic organs are hardened in formalin, either while still in position, or after complete removal of the entire contents from the body, and if they are then cut in a series of horizontal slices, as shown in the next slide, the position of the band will be very clearly seen. The following slide shows the surface of a set of these slices, and as I have said, the position of the band as seen here corresponds almost exactly with the position as demonstrated practically by the method I have pointed out. Such a method of examination, namely, by horizontal slicing of the pelvic contents, also demonstrates a very interesting and I think very important point, namely, that the uterosacral ligaments apparently form the upper limit of this band, and that from a practical point of view, one may consider the cervix and vagina as fixed to the pelvic wall by two strips of fibrous tissue, each of which begins above at the level of the uterosacral ligaments, and extends down as far, at any rate, as the levator ani muscle.

If anyone requires further demonstration of the existence and importance of this band, it will be obtained during the course of Wertheim's hysterectomy. In this operation the last step in the freeing of the uterus is the division of the uterosacral ligaments, and this allows the uterus to be drawn to a slightly higher level in the pelvis. One then has to cut firm fibrous bands which lie below the uterosacral ligaments, and which run between the vagina and

the posterior pelvic wall, and, when they have been cut to a depth of from a quarter to three-quarters of an inch, the vaginal fornices move forward, and with the uterus can be drawn to a considerably higher level, and one is able to reach points which up to this were inaccessible.

The remaining direct supports of the uterus and vagina are formed by the endopelvic fascia, and are not so easily demonstrated. This fascia forms two distinct sets of bands, one set of which passes anteriorly and forms the anterior false ligaments of the bladder, while the other set pass out laterally, surrounding and beneath the uterine vessels, and are known as the cardinal ligaments of the uterus, or as Mackenrodt's ligaments. The latter pair, as a rule, can be already demonstrated in cases of prolapse where they have become lengthened. It is, however, difficult to estimate the actual amount of support which they give normally to the uterus.

The foregoing comprise practically the entire support of the uterus and the vagina, with the exception of the ligamentous attachment of the lower part of the anterior vaginal wall to the urethra, and through it to the posterior surface of the pubic bones. The indirect support of the uterus is, however, also a matter of considerable importance. This support comes from the pelvic floor, and is mainly the result of the fact that the uterus lies horizontally in the pelvis, with its long axis almost at right angles to the axis of the vagina. It thus offers the maximum surface of resistance to the pelvic floor, while the non-coincidence of its axis with the axis of the vagina prevents any tendency to its descent through the latter.

We must now see how the injuries of labour affect both the direct and the indirect supports. The first and most obvious change is in the relation of the levator ani to the vagina. Deep tearing of the perineum destroys the slight attachments of the muscle to the central point of the perineum, and so allows its lateral bands to diverge outwards, while actual tearing of the muscle itself destroys the continuity of its inner edge. The result is that the lateral bands are widely separated, and that there is nothing to prevent the anterior or the posterior vaginal wall from bulging directly down through the vaginal orifice. Once the support of the lower part of the vagina is lost, there is a tendency for the middle part also to descend, because the posterior and lateral walls, instead of resting on the levator muscles, are unsupported, and have their pull transmitted directly to the suspensory fascia which

I have described. This fascia must be a very potent factor in supporting the vagina under normal conditions, but it is apparent that it does not possess great powers of resisting a continuous strain, and that when such strain comes upon it, it stretches, thereby allowing the middle portion of the vagina to descend. Clinically, however, I do not think that one often sees this progressive inversion. What happens, rather, is that first the lower part of the vagina protrudes, that then the vaginal fornices lose their support and descend, and that finally, as a result of continued traction, the middle portion descends also.

The earlier descent of the upper part of the vagina is due to the alterations that occur in the supports of the uterus, alterations which usually result in the uterine prolapse so to speak overtaking the vaginal prolapse, and eventually preceding it. The first direct step in the production of uterine prolapse so far as the uterus is concerned is backward displacement. This may occur as a result of the traction of a prolapsing anterior vaginal wall on the cervix, a traction which tends to pull the anterior cervical wall lower in the vagina, so carrying the body of the uterus back, or it may be due to simple falling back of a large uterus as a result of general relaxation of its ligaments. Whichever it is, the effect is very much the same. The axes of the uterus and of the vagina tend to come into coincidence, and the resistance which the uterus offers to its own descent is altered from a surface corresponding in size to its anterior wall to a surface represented by a horizontal cross-section (slides). In other words, practically all the support furnished to the body of the uterus by the pelvic floor is lost, and the weight of the uterus is thrown directly on to the uterosacral ligaments and the different parts of the endopelvic fascia. The uterosacral ligaments are strong bands, as can be easily proved clinically, but, like the vaginal suspensory ligaments, and indeed like all other fascial ligaments, once a direct pull comes on them, they yield. Their normal function is probably to keep the cervix in its proper relation to the posterior pelvic wall, and by so doing to keep the body of the uterus in front, and, once they receive the entire uterine weight, they fail, and stretch. Once they fail, the weight of the uterus is transmitted directly to its vaginal attachments, and to the endopelvic fascia, both of which are entirely unsuited to resist a direct strain. They too eventually yield, and so with the uterus the upper portion of the vagina comes down. It is probable then, that the most common sequence of events is, first, the prolapse of the lower portion of the anterior vaginal wall, with or without an

accompanying prolapse of the corresponding part of the posterior wall, then the prolapse of the uterus and the upper part of the vagina, and lastly, the prolapse of the middle portion of the lateral and posterior vaginal wall. This order may, however, be altered, and, as one sees in certain cases not associated with labour, the uterus may be the first part to descend, the inversion of the vagina being directly consequent.

There is a condition frequently associated with genital prolapse which probably affords an indication as to the order in which the prolapse has occurred. I refer to hypertrophy of the supravaginal portion of the cervix. This hypertrophy is not confined to the portion of the cervix between the insertion of the uterosacral ligaments and the vagina, but it is most commonly situated there, and it seems to indicate that there has been a conflict between the pull of a prolapsing vaginal vault below and the support afforded by the resisting uterosacral ligaments above. It is consequently reasonable, I think, to suppose that when one finds such hypertrophy present, the vault of the vagina has been the first part to prolapse, and the body of the uterus the last. In some cases, indeed, one actually sees this stage before uterine prolapse has occurred, that is to say, the uterosacral ligaments are of their normal length, the body of the uterus is in a practically normal position, the vagina is inverted and the cervix is at the vulva, being enabled to come to this position as a result of its supravaginal hypertrophy.

So far I have not referred to the alteration in the position of the bladder that accompanies genital prolapse. It is the direct result of the pull of the anterior vaginal wall and of the yielding of the ligamentous attachment of the base of the bladder and of the urethra to the posterior surface of the pubis. It may be the first step to follow injury to the pelvic floor, or on the other hand, it may be one of the later steps that result from the primary descent of the uterus. Once it has occurred, its action in hastening complete prolapse is considerable, because it leads to straining and increased intra-abdominal pressure during micturition and because it causes direct traction on the cervix of the uterus.

So much then for theoretical considerations. The more one studies prolapse, the more one sees how in its complete stage, it is the result in most cases of an initial fault, which, by altering the normal strain to which the suspensory mechanism of the uterus is intended to be subjected, throws the elements of that mechanism out of sympathy with one another. This is the most essential point to grasp in planning a successful operation for prolapse,

because just as the prolapse follows initially a single fault, so it will tend to recur after operation if a single weak point is left. Ventral fixation alone failed because the cervix was free to drop into the axis of the vagina, and so again to bring a direct pull on the uterosacral ligaments. Vaginal plastic work, alone, failed because the descending uterus was capable of again dilating the vagina and forcing the muscles apart. Hysterectomy failed because it took no account of the fixation of the vaginal vault.

We have now to see conversely if, when once prolapse has resulted, it is possible not alone to bring back the different structures to their normal relation, but also to abolish all abnormal strains which may be thrown upon them.

I think that one may consider rational prolapse operations as consisting of three parts:—First, the restoration of the normal direct support of the uterus and vagina so far as possible. Secondly, the placing of the uterus in such a position that it offers the maximum resistance to descent. Thirdly, the removal of complications and associated conditions, the result of prolapse. I will deal with these three parts separately.

THE RESTORATION OF THE NORMAL DIRECT SUPPORT OF THE UTERUS AND VAGINA. We have already seen that these supports are four in number: first, the uterosacral ligaments; secondly, the endopelvic fascia; thirdly, the suspensory ligaments of the vagina; and fourthly, the levator ani muscle. The shortening of the uterosacral ligaments with a view to restoring their normal action on the cervix is advisable in all cases in which they are stretched. It is essential when one is dealing with a small uterus, because such a uterus can not be made to offer sufficient resistance to its own descent unless its direct supports are also reconstituted. Wertheim was, I think, the first to recognize the importance of shortening these ligaments, and his operation is carried out by the vaginal route, but through the peritoneal cavity. I have also described a method of shortening the ligaments through the vagina at their point of attachment to the uterus, and this is the method which I usually adopt, as I consider it to be more easily worked in with the other stages of a prolapse operation than is Wertheim's method. It is unnecessary to enter into details here, though I hope, if time permits, to say a word about them later.

It is, however, necessary to say why uterosacral shortening is so essential in the small uterus, and the reason, if one thinks of it, is obvious. In a moment I shall go on to say that I consider Wer-

their's interposition operation to be one of the best methods of increasing the resistance of the uterus to its own descent. In this operation, the uterus is placed between the anterior vaginal wall and the bladder. If the uterus is of sufficient size, it is then directly supported by the levator ani muscle, as well as by the vaginal wall, and, furthermore, since it is too large to allow its body to remain in position while the cervix rotates round it and comes down again to the vulva, the result of the operation is usually excellent. If, on the other hand, the uterus is very small, the cervix, if free, can drop down through the vagina, pulling the remainder of the uterus after it. If, however, we fix the cervix by shortening the uterosacral ligaments, it cannot rotate round the body and drop, while at the same time the strain on the shortened ligaments is slight, and they do not tend again to elongate.

The shortening of the band of endopelvic fascia, known as Mackenrodt's ligaments, has also been advised in cases of prolapse. Some of the advocates of this procedure support their views by saying that Mackenrodt's ligaments must give a great deal of support to the uterus, because their division during the course of Wertheim's hysterectomy allows the uterus to be pulled to a much higher level. This argument, however, in my opinion is based on an inaccuracy. It is not the division of Mackenrodt's ligaments that allows the uterus to be pulled to higher level, but rather it is the division, first, of the uterosacral ligaments, and then of the vaginal suspensory ligaments, as I have already mentioned. At the same time, although I do not believe that Mackenrodt's ligaments have all the effect on the uterus which is sometimes attributed to them, I think that when they are shortened, they are capable of adding to the general support of the cervix. Such shortening, to be effective, must be considerable, and, if it is to be a safe procedure, it must be done with the greatest care, because, as we know, this part of the endopelvic fascia is pierced by the uteters, and if it is drawn out too far, I think that it is quite possible that kinking of the ureters may result. A moderate degree of shortening is always brought about when supravaginal amputation of the cervix is performed, in consequence of the insertion of these ligaments into the upper part of the vagina as well as into the uterine cavity, and, personally, I am not inclined to try to shorten them to a greater extent than is done in this way.

The support given by the vaginal suspensory ligaments is of the greatest importance, and if it was feasible to restore them to their original condition, such a step would be most desirable. At

the present time, however, I am not aware that any operator has suggested any effective method of dealing with these ligaments, and for my own part, I can only say that I do not see that it is likely that such a method can be brought forward, owing to their position. The nearest approach to shortening them is the fixation of the vault of the vagina to the peritoneum covering the anterior surface of the sacrum, as was suggested by Stanmore Bishop some years ago. The only objection I can see to this procedure is that it necessitates an abdominal incision, and this adds on rather too much to an already prolonged operation. Personally, I have not performed Bishop's operation, and I do not think that it has received from anyone the attention which, on theoretical grounds at all events, it deserves. Further work on the fixation of the vagina is very necessary, and, if it is carried out, it is possible that an effective procedure for the restoration of the important fascial connexion of the posterior vaginal wall may be devised. For the moment, however, we must consider that our efforts to restore the direct support of the vagina break down at this point, and that we are not capable of restoring effectively the vaginal suspensory ligaments.

The restoration of the levator ani muscle to its proper position is, on the other hand, a matter of ease and simplicity. It is an essential part of all perineorrhaphy operations, and is a step of the utmost importance in prolapse operations. I do not propose to enter into the method of suturing it on the present occasion, but will confine myself to saying that it is always possible and usually easy, except when the muscle has practically disappeared on one or both sides in consequence of atrophy or excessive retraction.

THE PLACING OF THE UTERUS IN SUCH A POSITION THAT IT WILL OFFER THE MAXIMUM RESISTANCE TO ITS OWN DESCENT. We have seen that, under normal conditions, the uterus lies practically horizontally in the pelvis, and that its resistance to descent may be expressed as that of a surface corresponding in size to the anterior surface of the uterus. On the other hand, when the uterus comes into a position of retroversion, usually the first stage of prolapse, the resistance that is offered may be expressed as that of a surface the size of a horizontal cross-section of the uterus. Furthermore, when in a position of retroversion, the uterus descends into the pelvis as a wedge, point downwards, and so readily forces or dilates a way for itself through or between any opposing structures. Finally, when the uterus offers a maximum resistance to its own descent, not alone does this increased resistance directly hinder

descent, but it also lessens the strain which is shown on the direct supports, and this is a most important matter. I do not think that it is possible by any means to reconstruct the direct supports in such a manner that they will resist the entire strain of the unsupported uterus, but, if this strain can be brought back to its normal limit, then in association with the reconstituted direct support, the tendency to prolapse will be overcome. The simplest method of bringing back the resistance of the uterus to the normal is by fastening the fundus in a position of anteversion. This can be done either by the shortening of the round ligaments or by the direct suture of the uterus to the abdominal peritoneum as is done in ventral suspension, and, as neither of these procedures in any way interferes with a subsequent pregnancy, one or other of them is indicated in the case of women still within the child-bearing period. It is, however, possible to increase the resistance of the uterus beyond the normal, but such a course inevitably affects detrimentally a future pregnancy, and may lead to the most serious results. Therefore, it is obviously only permissible in women who are past the child-bearing period, or in women in whose case there is no objection to producing an artificial sterility. The most important and the most reliable of such operations is undoubtedly Wertheim's interposition operation, and I have no hesitation in saying that it is the most valuable procedure, which has been introduced of late years, for the cure of prolapse, because not alone does it increase the resistance of the uterus to its own descent, but it also helps to fix the vagina in position, and to remove the prolapse of the bladder that both complicates and tends to perpetuate vaginal prolapse.

I have stated briefly of what the operation consists, namely, the bringing of the body of the uterus to lie between the bladder and the anterior vaginal wall. In this position, it is entirely extra-peritoneal, and so, necessarily, could not undergo proper development during pregnancy. The bladder is brought to lie wholly above it, and, provided the size of the uterus is sufficient, and that the cervix is fixed by the shortening of the uterosacral ligaments, I consider the result cannot at present be surpassed. On the other hand, where the uterus is small, and the cervix is not fixed, recurrence of the prolapse is very liable to occur.

THE REMOVAL OF COMPLICATIONS AND OF CONDITIONS ASSOCIATED WITH PROLAPSE. There are a number of conditions which are either the direct result of uterine prolapse, or one or more of its

predisposing causes. In the cervix we may find hypertrophy—vaginal or supravaginal, so-called erosion, true ulceration, and laceration. In the body of the uterus we find endometritis and the different conditions which are usually grouped under the head “metritis”, and which lead to uterine enlargement, and tumours such as myomata. In the pelvic and abdominal cavity we find again tumours arising either in the uterine appendages or from other organs, and ascites; while, lower down, we find very frequently prolapse of the bladder, more rarely prolapse of the anterior rectal wall, and, most commonly of all, perineal laceration. It is so obvious that these conditions must be removed, if a successful result is to be obtained, that it is only necessary to say a few words about them. Erosion, laceration, and hypertrophy of the cervix are best treated by amputation, either vaginal or supra-vaginal, according to the nature of the case. Endometritis is treated by curetting. Uterine tumours and abdominal pelvic tumours call for removal, while increase in the size of the uterus, apart from tumour formation, calls for reduction in its size by the amputation of a wedge-shaped portion from the body. This procedure is particularly necessary if Wertheim’s interposition operation is to be performed, and, if it is omitted, trouble is likely to occur during the operation, owing to the impossibility of providing sufficient vaginal mucous membrane to cover the large uterine body, and also later owing to the pressure which the large uterus causes at the lower part of the vagina. In such cases, the excision of a wedge-shaped portion of the body is essential, and does not add much to the length of the operation. Prolapse of the bladder is cured whenever the interposition operation is performed, and, when the latter is contraindicated, it can be cured by the performance of anterior colporrhaphy, provided care is taken to push the displaced bladder back into its proper position before suturing the edges of the vaginal mucous membrane. The cure of a prolapsed rectal wall is directly associated with the cure of perineal laceration, and as this operation involves the suture of one of the direct supports of the vagina, namely, the levator ani muscle, I have already referred to it in its proper place.

Mr. President, Ladies and Gentlemen, I have tried to place before you the theories on which I think the proper treatment of uterine prolapse must be based, and to indicate briefly the manner in which one transforms them into practice. To suggest that the result of operating along these lines is uniformly successful, would be equivalent to saying that we had reached finality, and this is

very far from being the case. All one can say is that we are beginning to adopt measures because of their probable permanent result, as opposed to measures which merely give a temporary benefit. There is, however, much room for improvement. So long as the posterior vaginal wall is left, as it is at present, with its supports in an imperfect condition, so long must operative procedure be defective. There are other points, too, in which improvement must come. The interposition operation is excellent in a suitable case, but it is incompatible with pregnancy. The restoration of the pelvic floor is in most cases effective, but it may be again destroyed during a subsequent labour. The very means which we adopt to reduce an enlarged uterus to a normal size may subsequently result in producing uterine atrophy, and so in removing the most effective part of the modern prolapse operation, namely, the placing of the uterus under such conditions that it resists, not alone its own descent, but the descent of the structures by which it is surrounded.

I have thanked you on my own behalf for the honour you have done me, and I could only wish that, for the reputation of the school which I represent, you had selected one who was more suited to put before you some of the problems of modern obstetrics and gynæcology, and their solution.

SURGICAL TEACHING

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SURGERY has developed within recent years into so large a subject that it is now impossible for anyone to be a master of the whole. The result of this has been that its various departments have each become an independent study, that specialities have been formed in all of them which are of sufficient importance, and that major operations tend to be reserved for the use of those who are specially skilled in their performance.

The conscience of American surgeons has been the first to be aroused to the practical importance of these facts; the steps they have taken to put their own house in order are well known to all of you, and they cannot fail to influence medical practice all over the world. Their action will also appeal so strongly to an educated and enlightened public that the only danger to be feared is that we may be asked why, knowing what we did, nothing had been done sooner to guard its safety and guide it to proper sources for treatment.

What I have said may be taken as an indication of the need for and approval of specialities, and so it is, but not as they are frequently taught and practised in Britain at the present time. With the exception of the eye and the teeth, I can conceive of no legitimate surgical speciality, and those require a good general medical and surgical education if dangerous mistakes are to be avoided. Every other operating specialist should have been an experienced and capable general surgeon and should have developed the speciality he adopts by his natural or acquired capacity for it. Even then he will only be of the highest use if he maintains his interest in and knowledge of general surgery.

This all means that surgery has now arrived at a position beyond the reach and power of the family doctor and that, unless in exceptional conditions, he should not, in the interests of his patient and himself, perform surgical operations. If there are

Address in Surgery, given at the annual meeting of the Canadian Medical Association, St. John, N.B., July 8th, 1914.

any here who do not accept this view now, it is safe to prophesy that the time is not far off when they will.

You may ask what has all this to do with the subject of my address—Surgical Teaching? It is this: that the teaching of those students who are to become practitioners should be different in character and more limited in aim than that intended for developing surgeons. It should be limited to teaching them essential truths, and diagnostic and prognostic principles, so thoroughly as to make it difficult for them to forget, as they usually do soon after graduation, most of the information they now so painfully acquire. What I regard as essential truths I will endeavour to convey later on.

Then the demand for post-graduate teaching is increasing as knowledge grows and is going to increase still further in the future. I hope everyone here has read what Sir William Osler has said of this. It is to the effect that, if a doctor is cut off from a medical centre and is isolated from his colleagues, a gradual deterioration, which he cannot recognize, goes on in his medical knowledge, so that at the end of five years he requires one month of hospital teaching to restore him; at the end of ten years it takes him one year in a hospital to pick up again, and at the end of twenty years he is in a hopeless plight. Thirty years ago progress in medicine was so slow that a good knowledge once acquired sufficed for a lifetime. As this is no longer true the changed conditions are explained.

No one who has thought about the subject doubts that the welfare of the public depends more upon the efficiency of the practitioner than upon any consultant or specialist, however distinguished he may be. The family doctor is consulted before anyone else and the fate of a patient is more often decided by his action, or inaction, than by any other factor. Striking examples of this are to be found in (1) the importance of early recognition of malignant growths and ulcers, for which the only hope of cure at present is to be found in operation while the disease is still local; (2) the abdominal emergencies, such as acute appendicitis, ruptured stomach or intestine, and acute cholecystitis, before septic peritonitis has decreased their chance of recovery to a fraction of what it would have been earlier; (3) acute intestinal obstruction, in which the prognosis may be said to depend upon the time after onset that operation had been performed, and (4) intra-abdominal hæmorrhage from injury, ectopic gestation, etc., because arrest of hæmorrhage before the patient's general condition has become serious will almost certainly be followed by recovery, whereas a

late operation is likely to be unsuccessful. Post-graduate teaching for the medical practitioner is consequently one of the most important medical movements of to-day.

The education of a surgeon is always incomplete if he is not a good anatomist, physiologist, and pathologist to start with, and continues to be so to the end, and it is only by those who will take the trouble to attain and maintain this knowledge that any real surgical advance can be made. It would be impossible to offer a better example of this than is to be found in my predecessor, Dr. Crile. The days when surgery was a mere handicraft are past, and to be able to operate well, though a useful accomplishment when properly applied, may make a man a curse instead of a blessing to the community in which he practises. With the foundations I have suggested a long apprenticeship under skilled masters is still necessary to anyone who aims at becoming himself a master in surgery, and post-graduate visits to surgical clinics are as essential to him as post-graduate courses are to the medical man. The whole surgical world will follow with keen interest the conduct of the American surgeons in their appointment of "Efficiency Committees" for their hospitals, the results of their enquiries into the immediate and remote results of operations and operators, and their honest and strenuous endeavour to lift surgery on to a higher plane. If they succeed, and there is every reason to believe they will, the dawn of a new surgical era is in sight. It is not, however, my intention to say anything more of surgeons.

The surgical teaching, of which I intend to treat now, concerns medical students, and will only distantly relate to the most important part of it all, hospital practice.

The revolution in surgery brought about by Lister turned surgical attention so strongly to bacteria and their doings that a considerable number of surgical text-books, disregarding the practice of their forefathers and the introduction to surgery by inflammation, have as their first chapter, one on bacteria. This was a good influence when the importance of the germ theory of diseases was in doubt. It is so no longer, and the time has come, I think, when we should return to our old practice of considering inflammation as the first chapter in surgery, because, when that is understood, more than half of surgical theory and practice becomes intelligible. Another reason is that we now know that the importance of bacteria in surgery has been somewhat overrated. Bacteriologists tell us that our most perfect technique fails to keep organisms from wounds, that asepsis by our present methods is not

attainable, and they may advise us of the presence of malignant organisms in wounds when we see that no harmful effect has been produced. Up to the present we have only arrived at the stage of surgical cleanliness, though our aim has been and still is a perfect asepsis. More and more we are coming to appreciate the conditions of the patient and the vital resistance of his tissues, seeking to derange neither and to conserve both.

I now wish to give a few examples of the method I have evolved, after teaching surgery to students for twenty-five years. Anyone interested will be enabled to follow this up, since Mr. Saint is helping me to rewrite a second edition of my book, "An Introduction of Surgery," and I wish here to express my indebtedness to him for suggestions.

Examples of Essential Surgical Principles

INFLAMMATION. The chief reaction of the tissues to any irritant are: (1) vascular changes, (2) cellular proliferation. A reaction sufficient to cause redness, heat, pain, swelling and loss of function is called inflammation. When the vascular phenomena predominate the inflammation is acute. Chronic inflammation has, as its chief characteristic, cell proliferation (granulomata).

Tissue irritants are either (1) non-infective or (2) infective. The non-infective include such agencies as mechanical, electrical, thermal, x-ray, and chemical injuries. The infective are micro-organisms.

1. The inflammation, which results from reaction of the tissues to non-infective irritants, has first to deal with effects of the damage and second to bring about healing. (It has seldom to do with the cause since the agent producing the injury is generally removed.) The amount of the inflammation is here a response to the quantity of the irritant, and, as its concern is limited to repair, I have been accustomed to describe it as "physiological" inflammation.

2. The inflammation resulting from microörganismal infection has as its function first, to deal with the cause (germs); second, with the damage effected; and third, to bring about repair. The disturbance caused is a response to the quality of the irritant, and the result depends chiefly upon this factor—I have therefore been accustomed to designate it as "pathological" inflammation.

The aim of both is natural cure.

Repair of all wounds is brought about by cellular prolifera-

tion (formation of granulations). In a wound of the soft parts healing by "first intention," or in a fracture without displacement, the amount of granulation tissue formed is limited to a minimum; in either case when a gap is present a sufficient amount of granulation tissue is formed to fill it. The round cells forming the granulation tissue, and derived from the active reproduction of cells of the surrounding tissues, become converted into fibroblasts, then into fibrous tissue (scar in the soft parts) or bone.

EFFECTS OF CIRCULATORY DISTURBANCE. The important role played by circulatory disturbance, perhaps because it is so simple, does not at present receive the attention it deserves. I have pointed out (*British Medical Journal*; October 28th, 1911) the importance and prognostic significance of it in cases of peritonitis and later I will draw attention again to it as the most important feature in strangulation, volvulus and inversions. Faith in toxins and toxæmia, and in the results of their action, of which at present we know very little, has prevented investigation of less difficult problems.

The effects of circulatory disturbance brought about by mechanical agencies are well enough known, and have been observed from time immemorial in the limbs after the application of a too tight bandage. If such a tight bandage has been applied to the arm, the removal of the constriction may result in: (1) transitory hyperæmia; (2) fibrosis (Volkmann's ischæmic contraction); (3) partial destruction (ulceration, sloughing); (4) total destruction (gangrene).

The local terminations are the same as those of a streptococcal infection of the arm.

TERMINATIONS OF INFLAMMATION. From the familiar boil most important lessons in surgical pathology may be learned. The etiology, pathology, symptoms, diagnosis, prognosis and treatment of inflammation everywhere can be understood and appreciated after the careful study of a boil. The terminations of it are those of inflammation elsewhere.

1. The red, hot, painful swollen spot may quickly disappear and leave no trace; *resolution*.

2. It may threaten mischief, and then subside, leaving a permanent firm nodule of fibrous tissue (blind boil); *fibrosis* (sclerosis in the bones).

3. It may suppurate and slough (discharge a core); ulceration, sloughing in the soft parts, caries and partial necrosis in bone; *partial destruction*.

4. It may develop gangrene (facial carbuncle), and cause death (gangrene of the soft parts, necrosis in bone); *total destruction*.

GENERAL CONSIDERATIONS CONCERNING INFLAMMATION. In considering every case remember that causes are predisposing and exciting, that results are general and local, and that either may be more important than the other in each particular example.

APPLICATION OF GENERAL PRINCIPLES CONCERNING INFLAMMATION TO SPECIAL ORGANS. Special study of each individual organ or part of the body has hampered rather than helped surgical pathology, on which a proper understanding of the problems to be solved chiefly depends. In every organ and in each part of the body the essential changes in inflammation are the same, anything special can be readily appreciated when these are understood. When such knowledge is applied to a condition like pancreatitis the difficulties and doubts surrounding the literature concerned with it vanish. Many varieties are described—cirrhotic, phlegmonous, suppurative*—gangrenous, hæmorrhagic, and others, making confusion worse confounded. An inflamed pancreas like a boil may undergo resolution, develop fibrosis, suppurate or slough or become gangrenous. The only special type is the hæmorrhagic and that is probably the result of autodigestion of the blood vessels, and accidental.

INFLAMMATORY FEVER. General disturbances in inflammation are grouped together as fever. Special types are: sapræmia (toxic), septicæmia (bacteria in the blood), pyæmia (the deportation of emboli from a septic focus).

EXTENSION OR SPREAD OF INFLAMMATION. Extension of the process in inflammation, as in malignant growths, occurs by (1) continuity, (2) contiguity, (3) the lymphatics, (4) the blood stream. For example, in appendicitis the inflammation may extend (a) directly to the cæcum and appendix mesentery, (b) to the contiguous peritoneum and coils of intestine, (c) to the lymphatics and cellular tissue, and (d) to the ileocolic vein and liver.

Cancer of the rectum may extend (a) up and down the bowel, on either side into the levator ani muscles and ischiorectal fossa, in front, to the prostate and bladder, behind to the sacrum and nerves, above to the peritoneum, (b) to the adjacent coils of small intestine lying in the pelvis, (c) to the lymphatic glands in the mesentery, (d) to the liver by the blood stream.

*Suppuration and abscess formation, though so important surgically, are not essentials of either pyogenic or tuberculous infection.

For several years this has been my teaching and till this year I had found nothing resembling it in surgical literature. Recently in reading some old dissertations belonging to the Royal Medical Society of Edinburgh, I discovered that the late Professor Syme, in the year 1821, when he was forty-two years of age, said of bones: "Although the disease of bones may appear to a careless observer almost endless and complicated beyond the powers of description, they are found upon investigation to be few and extremely simple. They are all preceded by inflammation and are the terminations of this action. . . . The most gentle action carried on in bones is the adhesive inflammation or that which provides for the union of simple fractures." This simple teaching has been departed from since that day, to the great misfortune of students and to the detriment of surgery. By recognizing a non-infective and an infective cause for inflammation the difficulties of fitting in Syme's statement with present knowledge are surmountable.

DANGERS common to all-wounds are shock, hæmorrhage, and sepsis. The use of a knowledge of general principles is emphasized by a story Mr. Saint told me of one of his students, a clever, but somewhat idle young man. In his final examination one of the questions asked was: "What are the symptoms produced by and the dangers following a penetrating stab wound of the chest wall in the midaxillary line?" The student knew nothing of it, but proceeding on general lines he first described the symptoms produced by shock, then he followed with hæmorrhage from the lung and from an intercostal artery, and ended up his answer with the conditions resulting from sepsis in the wound and in the pleura and in the lung. He knew that the dangers of every wound arose from shock, hæmorrhage, and sepsis, and applied this knowledge to the case. He did not know that the escape of air from the lung might cause emphysema and pneumothorax, but his answer otherwise was so good that his examiner credited him with almost full marks, thinking that he must have forgotten to put down the matter concerning air escape.

Joints—General Considerations.

DISEASES OF THE JOINTS are a bug-bear to students as usually taught, but when they learn that, for surgical purposes, in all joints four structures are to be considered; bone, synovial membrane, cartilage, and ligaments; that disease commences only in bone or synovial membrane, not in the ligaments or cartilages;

and that the diseases are chiefly due to inflammation with its usual etiology, pathology, symptoms, diagnosis, and terminations, they soon acquire a satisfactory grasp of the subject.

Arthritis of all large joints of the extremities passes with variable rapidity through three clinical stages:

In the first the limb is held *voluntarily* by the muscles in the position of greatest ease.

In the second the limb becomes fixed *involuntarily* by contraction of the muscles. This stage commences with night startings and the strongest muscles win the battle.

In the third stage there is deformity from destruction of the joint, especially the ligaments and bones, and this is characteristic for each joint.

Applying this to the hip joint, which occasions perhaps the greatest difficulty of all, we find: In the first stage, that of voluntary contraction, the limb is flexed and abducted—the position of ease. Abduction necessitates, in order to make the limbs parallel, the pelvis on the diseased side being tilted downwards, and there is consequently *apparent lengthening*. In the second stage, that of involuntary muscular contraction, the limb is flexed and adducted by the stronger adductors. Adduction necessitates, in order to make the limbs parallel, the pelvis on the diseased side being tilted upwards and there is consequently *apparent shortening*. In the third stage destruction of the bones and ligaments frequently ends in a dorsal dislocation, with deformity and *real shortening*.

SURGICAL DEFINITIONS UNDER INFLAMMATION. Definitions may be of considerable use in teaching, because they make students think and give them pegs to hang their thoughts upon. For example: a *sinus* is a tubular ulcer with something at the bottom of it preventing healing. A *fistula* is a tubular ulcer, or the remains of one, which opens on the skin externally and a mucous canal internally, or forms a communication between two mucous canals. An *abscess* is a cavernous ulcer containing pus. An *empyema* is pus in a preformed cavity.

ULCERS. My teaching with regard to ulcers is that they are the result of defective blood supply. In simple, as distinguished from malignant, ulcers, the defective blood supply causing them is nearly always due to inflammation, so that the predisposing causes of ulcer are those of inflammation, and the exciting cause infection by organisms, usually pyogenic or those of tubercle and syphilis.

GANGRENE has always been, and will continue to be, a difficulty with students so long as the confused teaching surrounding it lasts. If they are taught that the *cause* of gangrene is total arrest of the blood supply to the diseased part, the rest can be made plain. Total arrest of the circulation can be brought about by mechanical agents (external,—e.g., tight bandage, internal, e.g. ligature of vessels, disease or clotting in them), chemical, electrical, thermal, and other means. It can also result from microbic infection, i.e., the fourth termination of infective inflammation. In this rare form of gangrene the infection is primary and the gangrene is due to arrest of the circulation from virulent inflammation. With the exception of the primary infective form, all varieties of gangrene may be either dry (aseptic), or moist (septic), depending upon whether secondary infection has not or has followed the development of gangrene. This conception is of considerable practical importance, as prevention of sepsis will ensure a dry and favourable form of gangrene, whereas neglect of the necessary precautions is likely to be followed by the dangerous moist variety.*

The Abdomen and Pelvis

A knowledge of general laws in surgery is nowhere of such importance in aiding the understanding of pathological problems as in the abdomen and pelvis, and there is no part of the body in which they have been more neglected.

PAIN. The causes of abdominal pain have been much discussed, and it surprised most of us to learn, after experience had taught us that the greatest pain we had ever suffered was abdominal in origin, that the abdominal viscera were insensitive and could be cut or burned or otherwise maltreated without causing any discomfort. For more than twenty years I have taught that the great cause of abdominal pain is the *forcible contraction of unstriated muscle*, and I still believe this to be true. Labour pains may be regarded as a physiological example of this pain, all the colics as pathological evidences of it. Hertz, in his careful and brilliant study of the subject (Goulstonian Lectures, R.C.P., London, March, 1911), came to the conclusion that intravisceral tension is the sole cause of visceral pain but this does not, I think, cover the whole ground. The most usual stimuli to forcible contractions are the presence of a foreign body plus inflammation, and excess of carbonic acid in the blood increases the irritability

*All types in the beginning are moist, and, throughout, all are potentially moist, only requiring infection to make them so.

of unstriated muscle and predisposes to an attack. As the quantity of carbonic acid in the blood is increased during sleep an explanation of the frequency with which colics occur during the night is forthcoming.

EFFECTS OF PROLONGED CONTRACTIONS. After prolonged and intense effort exhaustion follows, and, though the cause may not be removed, the effect (pain) disappears. This is common knowledge to those familiar with the behaviour of the pregnant uterus; it is equally true of the urinary bladder, the intestines, the ureter, the gall-bladder and bile ducts, and other muscle-coated viscera.

EFFECTS OF STIMULI. All hollow viscera react in a similar manner to stimuli.

EFFECTS OF PARTIAL OBSTRUCTION. This first causes a thickening of the walls and diminution of the cavity. Examples in the urinary bladder following prostatic disease and stricture may be seen in every museum. In the gall-bladder of gallstone cases the similar condition has been described as Courvoisier's Law, but the meaning of it has not yet been generally grasped.* In the early stages of pyloric stricture the walls of the stomach are thick and its cavity diminished in size.

EFFECTS OF INSURMOUNTABLE OBSTRUCTION. In addition to being followed by cessation of pain, complete obstruction results in paresis of the viscus, passive distension of it, and, later, possibly degeneration of the muscular coat. Patients with a urinary bladder in this condition most frequently complain of incontinence, and are found to have a distended tender bladder and overflow. A period of agonizing pain and inability to micturate preceded the period of relief. The gall-bladder has been found so largely distended with its own secretion as to have been mistaken by competent observers for an ovarian cyst. Lesser degrees of a similar painless distension of the gall-bladder are familiar to all surgeons. These conditions have been preceded by a violent attack of gallstone colic which has driven a stone or stones into the neck of the gall-bladder or the cystic duct, of sufficient size to cause a complete block. A similar painless distension of the common bile duct and gall-bladder is produced by cancerous strictures occluding the duct or by a cancerous head of the pancreas blocking it; painless distension of the cæcum may follow obstruction in the large intestine;

*Microscopic examination of specimens not destroyed by disease proves that the thickening of the wall is chiefly due to increase of the muscular coat.

the stomach with a sufficiently obstructed pylorus becomes subject to enormous painless distension and the same is true of all the hollow viscera.

TENSION GANGRENE. Under this title I have described a striking group of conditions which can and do occur in all of the hollow viscera. When in any of them active inflammation is added to obstruction, unless relief is promptly given, the intra-visceral tension becomes so acute that the circulation is interfered with, and either partial or total destruction follows. The first area to become gangrenous in these cases is, as would be expected, that farthest from the source of the vascular supply. In the gall-bladder it occurs at the fundus, in the urinary bladder at the superior portion of the posterior wall, in the vermiform appendix and intestine at a point opposite the mesentery—and in all as a rounded or oval patch.

FOREIGN BODIES IN MUSCULAR TUBES. When a foreign body, such as a stone, gets into the ureter, urethra, bileduct, or intestine, it is spasmodically grasped, and, independently of its size, may produce complete or temporary obstruction. Thus a stone in the ureter produces hydronephrosis, a stone in the urethra retention of urine, a stone in the common bileduct jaundice, and in the intestine obstruction. After a time in each instance the spasm relaxes, and relief follows. It is difficult for a stone, however large, to block any of these muscular tubes completely and permanently, because active dilatation of them round the foreign body commences after the spasmodic contractions subside. Every experienced surgeon has seen a ureter or a common bile duct the size of a small intestine from this active dilatation, and due to a stone in it. A stone the size of a pigeon's egg as shown in the skiagram could not be forced down the ureter. It is obvious that active dilatation of it such as occurs in the genital canal before the child birth is essential to its progress.

SACCULI. All of the hollow viscera are subject to hernial protrusions of their inner through their outer coats. They are well known in the urinary bladder, in all parts of the gastro-intestinal tract, the gall-bladder, the vermiform appendix, and the Fallopian tubes. Everywhere except in the colon there has been agreement as to their nature and their name. They are always, so far as is known, associated with some defect in the walls of the involved viscus and some obstruction to its outflow. In the colon they are usually described in current literature as diverticula, and this is one of the unfortunate consequences of narrow pathological

views. More than once previously I have drawn attention to points which should distinguish the diverticula from sacculi, and they are as follows: the diverticula are of congenital origin, all of the coats of the intestine enter into their composition, they may be found at any age, are single, and have an independent vascular supply of their own. The sacculi are acquired, are chiefly composed of the inner intestinal coats, are seldom found in youth, being limited to aged persons, are multiple and rounded in shape, seldom attain to large size, and have no special vascular supply.

The pathological happenings, however, in diverticula and sacculi closely resemble each other. Concretions may be found in each, and inflammation with its usual terminations occurs in both. There is abundant evidence that Meckel's diverticulum, like the vermiform appendix, and the sacculi, may harbour concretions, or as a result of inflammation, may become fibrosed, be partially destroyed by ulceration, or totally by gangrene. In all of them abscess or peritonitis may follow perforation, and early operation may rescue the victims of each from death.

CALCULI. The favoured positions for calculus formation are the hollow abdominal and pelvic viscera, though they have been found in many parts of the body and in different organs (blood-vessels, brain, salivary glands). In ordinary conditions they produce few or no symptoms and merely act as foreign bodies predisposing to infection, with a natural tendency to escape by abscess formation. Bladder calculi and their conduct are best and longest known to surgeons. Many of these have reached an enormous size without producing serious symptoms or much discomfort. The symptoms of a bladder stone described in surgical text-books are those of calculus plus cystitis. I have seen urinary fistulæ in the perinæum and above the pubis as a consequence of abscess formation, when nature has attempted to extrude the stone and relieve the symptoms.

Renal calculi may be present in the kidney for years and cause no symptoms. The symptoms described as characteristic of renal calculus are due either to mechanical obstruction and increased renal tension, which may result from other causes, or to forcible contraction of the muscular coats of pelvis or ureter, especially with superadded infective inflammation. The offending renal stone may eventually be expelled through the discharge of an abscess in the loin, and a natural cure can be wrought in this way, though usually with the loss of the affected kidney by suppuration.

Biliary calculi are frequently found in the gall-bladder, and

even occasionally in the common bile duct, when the most carefully taken history fails to elicit any symptoms which could be fairly connected with them. This photograph (exhibited) shows a column of large stones, four inches long, discovered accidentally during an operation for colon cancer. No symptoms which could be attributed to these gall-stones had ever been complained of. It is twenty years since I pointed out that biliary colic is the result of forcible contraction of the gall-bladder or bile ducts, due to their violent efforts to expel the stones, and that inflammation of the lining membrane of the gall-bladder or ducts is an almost constant part of the needful stimulus.

Biliary-like vesical and renal calculi can be extruded as the result of suppuration and escape through the gastrointestinal tract, from the surface, or into the peritoneum, where they may become encysted.

Stones may travel without causing painful spasmodic contractions down both the ureter and the common bile duct if their lining membrane is not inflamed; in each case a natural cure can follow.

INVERSIONS. All of the hollow viscera may turn inside out and for each viscus a different name has been given to the same process. In the intestine it has been called intussusception; in the veriform appendix, Meckel's diverticulum; the ureter and uterus, inversion; in the urethra, vagina, and rectum, prolapse. It is, as yet, only possible to speculate as to the cause and to suggest that in most cases an abnormally active portion above has been prolapsed through an abnormally passive portion below. It is certain that attempts to extrude a tumour in some have been the cause of inversion.

TORSIONS, or twists, have been recorded of the intestine (volvulus), stomach, gall-bladder, appendix, kidney, spleen, omentum, uterus (pregnant and fibroid), ovaries, Fallopian tubes and testes. Much in the etiology, pathology, symptoms, diagnosis, prognosis and treatment of all of them is the same. In all of them, there must be a pedicle or stalk to twist, either congenital or acquired, there must be room to turn in, and they must have a shape which allows of torsion. These requirements are best met if an ovarian cyst of moderate size has complicated pregnancy, when after delivery of a full-time foetus, all of us are familiar with the occurrence. It is easy to understand the sequence of events then; it is impossible to explain them satisfactorily in many of the other instances recorded. The pathological changes that occur locally

in all instances are the consequences of interference with the blood circulation, which may result either in temporary hyperæmia, fibrosis, or partial or total destruction. The symptoms in all are acute sudden pain, followed by evidences of more or less shock, with usually a history of previous attacks of similar character. The diagnosis is based upon these symptoms and the discovery of a tender swelling: the prognosis depends upon whether an early or late diagnosis has been made: the treatment is prompt operation.

STRANGULATION. I have already drawn attention to the fact that inflammation is acute when vascular disturbance is in excess, and that the extent of this is the surest guide to prognosis. It seems scarcely possible to doubt that everyone here recognizes the same to be equally true of the conditions which we have been considering, though students have not been taught this important truth. A hernia is dangerous and the symptoms caused by it are acute if its blood supply is interfered with, and we then call it strangulated; an inversion is chronic and causes little distress till its blood supply is actively disturbed, until, that is, it becomes strangulated; the same is true of the torsions, the symptoms and prognosis of which are chiefly dependent upon the amount of vascular disturbance, produced.

IDIOPATHIC DILATATION. I can find no better name, even though it is a confession of ignorance, for changes which have been observed in many of the hollow viscera, changes which are very similar in each viscus and which have so far evaded most careful search as to the cause. They may be acute or chronic.

The chronic variety is of greatest interest in the œsophagus, which may be so much dilated and so inefficient in delivery, as to hold an entire meal—the name given to it is cardiospasm.

In the stomach acute dilatation is of the greatest importance, because recognition of it in time often means the saving of a life, and failure to make a diagnosis is likely to end in a calamity. After operations, especially abdominal, following injuries, typhoid fever, pneumonia, after labour, or the application of a Sayre's jacket in cases of Pott's disease of the spine, the stomach may suddenly dilate to such an extent as to fill the abdominal cavity, and the patient soon dies unless relieved by the passage of a stomach tube.

In the small intestine the condition is known as paralytic ileus, and this chiefly follows abdominal operations, though it occurs occasionally in the course of Bright's disease and diabetes, and may happen after labour or injuries not involving the abdomen.

The first sign of it is painless distension of the abdomen, which may only be increased by purgatives and enemata, and which may even refuse to be relieved by an enterostomy, and in the end cause death.

In the large intestine the chronic variety has attracted much attention and is known by the name of "Hirschspung's disease." Though the sigmoid flexure is its favourite site, the entire colon may be affected by it, and the abdomen is thus distended by enormous coils of intestine containing many pounds of faecal matter.

For the rectum a similar condition is known as "ballooning," and in the older medical works considerable importance was attached to it as a sign of mechanical obstruction somewhere in the bowel above, but this interpretation is now known to be fallacious.

Acute dilatation of the bladder is a common sequela to some operations, the chronic variety is rare. A boy of nine, under my care in the Infirmary, had a bladder so distended as to be mistaken for a large cystic tumour, and his abdomen measured $27\frac{1}{2}$ inches round at the level of the umbilicus. The passage of a catheter prevented an unnecessary operation, and a few days later more than $5\frac{1}{2}$ pints (114 ounces), which apparently caused him no inconvenience, were removed from his bladder by catheter. Active contractions, such as occur in the dilated colon, were observed whilst the bladder was emptying, making the resemblance between the two conditions one not to be forgotten. Enormous dilatation of the bladder and ureters has also been found in new-born babies and no ordinary mechanical causes could be given as an explanation. I have also seen conditions which seemed to be like these in the gall-bladder, the common bile duct, and the uterus.

In concluding, though it might seem scarcely necessary after what has gone before, I wish to emphasize my belief that success in understanding and teaching surgery depends upon unceasing recognition of general principles. Many things, that at first sight appeared to be disconnected, can be brought into line if studied from this point of view, and I am convinced that a position of secondary importance should ordinarily be assigned to the consideration of detail.

INFANT MORTALITY

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INFANT mortality is to-day one of the great national, social, and economic problems. The future of every nation depends on its children, their physical, intellectual, and moral strength. If the infants die there will be no children to educate. Formerly, and in fact only till recent years, it was considered that the nation with the highest infant mortality was the most fortunate. How frequently one hears the assertion that delicate infants should not live, that efforts directed along this line are futile, and that hospitals erected for the saving of these delicate children are but misguided pieces of philanthropy, and in fact some go so far as to state that such measures are more or less a perversion of medical science and that it interferes with the law of natural selection, which is the survival of the fittest. One has but to consult the biographies of many of the scientists of the world to contradict these disillusioned and unfounded impressions. Most of those who in infancy are regarded as physically unfit were healthy at birth and merely the victims of a bad environment, improper feeding, and neglect; in short, conditions which it is quite possible to remove.

The infant problem is as old as the human race, although in different places and at different periods of the world the standpoint has changed. Among the savage and barbarian nations the excess of infants was always destroyed in order to curtail the too rapid increase, especially when there were too many mouths to fill. Among the Greeks the newborn child was passed on by a committee and if deemed physically unfit was destroyed. The old Roman custom allowed the father to have the deciding point as to whether the child should or should not live. Universally all delicate and deformed infants in the older days were destroyed. To-day in India and China there still exists a mild form of deci-

mation but in both these countries this is rapidly gaining public disapproval.

One speaks of armies being "decimated" by war; of a people being "decimated" by a pestilence, and at such conditions remains aghast at the tragedies of human existence. Yet the universe looks on unmoved at a decimation or slaughter which has been in our midst for untold generations. Under the very best conditions this destructive process amounts to simple decimation; at the worst, not merely simple but to double, triple, and even quadruple decimation. This form of decimation is infant mortality, which until recent years has practically passed unnoticed. It is safe to say that very few, except those who are interested in the matter, are aware of the actual status of the mortality attendant upon infants in the first year of life. In fact, the average physician does not realize his responsibility in the important work of lowering infant mortality, and by this indifference he opens the portals of this most important field of preventive medicine to social workers and philanthropists.

The following facts may serve to give one the idea of what infant mortality is: a newborn child has less chance of living a week than a man of ninety, and of living a year than a man of eighty. Over 3,200,000 infants less than a year old perish annually in the countries forming the civilized world, or, in other words, one infant dies in every ten seconds, every hour of the twenty-four. Vital statistics permit of most startling revelations; for instance, in Ireland, which has a favourable death rate in infants, one has an example of simple decimation. During the period of 1895 to 1904, 104 infants died for every one thousand born. In Germany an example of double decimation is seen where for the past ten years there have been 197 infant deaths for every one thousand born; in other words, two in ten. Russia affords an example of triple decimation, where 263 infants died out of every thousand born, or three in ten. One might go further and find that in certain sections of the globe, infant mortality was even greater than this, as in the city of Manila in the Philippines where the rate in infants under one year is 48 per cent. of the total deaths. The countries most favourably situated are Sweden and Norway, with averages of 96 and 86 respectively for the past ten years, although their rate has been somewhat lower than this of recent years (Prinzing), reaching in Norway the extraordinary figure of only 69 out of every thousand born in the year 1907. In the last two decades France, Denmark, and Russia have shown a uniformly high ratio, while

during the period 1886 to 1896 Belgium, Great Britain, and Ireland showed a considerable increase.

In the United States and Canada, owing to the regrettable fact that birth registration is not enforced, the mortality figures can only be estimated. In fact, in the former country only about 60 per cent. of the population live under effective operation of any vital registration laws whatever, and only a few states pretend to any accuracy in the registration of births. With these facts in view it is estimated that out of every one thousand born in the United States, 150 infants perish, that in many cities, particularly in the manufacturing towns, the death rate is even double this. In Canada our laws are every bit as lax, and what with the indifference of the general public and physicians at large only a crude estimate may be reached as to the mortality. Taking nine representative cities in the Dominion we found the mortality per 1,000 births in each to be as follows: Montreal, 290; Toronto, 144; Ottawa, 256; Quebec, not known; Hamilton, 173; London, 164; Winnipeg, 169; Edmonton, 171; Halifax, 204. According to Koplik fully 33 per cent. of the deaths of infants occur during the first four weeks of life and numerous European observers state that from 5 to 7 per cent. of infants born die before the first month of life is reached.

Some years ago the question of infant mortality occupied the attention of two French physicians, Balestra and Gileta de St. Joséf. They examined the death returns of 2,500 French cities and towns and carefully analyzed the causes of death of infants under one year. They found that out of one thousand such infant deaths 385 were due to gastro-intestinal disorders; 171 died of congenital debility, 147 to diseases of the lungs, 50 to infectious diseases, 25 to tuberculosis, and 222 to all other causes. Thus it is seen that digestive and respiratory troubles are responsible for 70 per cent. of infant deaths. Similar analyses in European countries have revealed like results. A chart compiled by Westergaard from Berlin statistics showed the death rate high—221—in the first month, falling rapidly at first to 99 in the second month, and then more and more slowly to 34 in the twelfth month.

The following facts serve to show that in districts not under the supervision of physicians or nurses the death rate is markedly increased. According to Von Mour, in the year 1893 in ten districts in Bavaria with an infant mortality from 40 to 60 per cent. only from 1 to 11 per cent. of the children received medical attention and, further, in the district with the highest mortality (46

per cent.) only 1.1 per cent. of the cases were attended to by physicians.

It is difficult to realize the boast of progress in the last quarter of the nineteenth century and it is difficult to understand the claims for the twentieth century namely, a continuation of enlightened progress, if the page of vital statistics is to be marked and marred by an increase of deaths of infants from intestinal troubles whose history and etiology are definitely understood. If improved medicine, science, more healthful living conditions, more wholesome food, better sanitary regulations, cannot explain this seeming inconsistency of an increased infant death rate, must there not be another cause to explain the anomaly?

War characterized the age of man, religion the age of woman, but sacrifice and service typify the age of the child. Socrates in his wisdom wrote, "In every work the beginning is the most important part, especially in dealing with anything young and under." It was the baby who first awakened that most wonderful and sacred force—the mother love, and aroused that most powerful and protective influence—the father love. The baby is the citizen of the future and his rights we cannot afford to neglect. In fact, one well-known writer claims that the care of the child is the index of civilization and infant mortality the most sensitive sign we possess of social welfare. Careful students of the subject of infant mortality have estimated that from 30 to 50 per cent. of the infant deaths are preventable, hence our stimulus to finding a remedy.

In a résumé such as this it is impossible to touch in detail all the etiological factors and for this reason we have selected the three most important, namely, neglect, ignorance, and poverty. These three causes may perhaps be called the three fundamental causes of infant mortality. Poverty means poor health for the mother, lower intelligence, lack of energy, and general inefficiency, and forces families to live in crowded insanitary surroundings. Poverty forces mothers to work for a living, depriving their babies of breast milk, and, as a consequence, these infants are unable to thrive and develop in the poverty-stricken homes into which they are born. Infant mortality may be called a "class mortality" for it is excessive among the poor and low. The future of our country depends on its poor children. If they are eventually to justify their place in the world they must be saved from ill health, ignorance, and vice. The first step is to give them good food and air so that they shall have strong bodies. It is the duty of the community and of

the physician to give the baby of the poor a fair chance. Infant mortality should not be a question of the survival of the fittest, for it is our task to see that every baby is made fit.

The great importance of breast feeding has long been known, but so far the subject has failed to secure its proper share of attention. Advertisements of infant foods and an abundance of medical literature on scientific feeding have lulled both mothers and physicians into a false sense of security in the practice of artificial feeding. The fearful loss of infant life is so spread out over the entire country that the individual physician does not appreciate his own responsibility, though a conservative estimate attributes a full third of all infant deaths to unnecessary bottle feeding.

During the siege of Paris, 1870-71, when the milk supply failed, the Parisian women nursed their children and the infant mortality fell from 330 to 170 per 1,000 births (Brehmer). A similar fall was seen during the Lancashire cotton famine when mothers were not at work in the mills (Devine). According to Joschke an analysis of 13,952 children born in Bauchelogue's clinic showed an infant mortality of 14 per cent. for breast-fed children, and 31 per cent. for those who were bottle-fed.

The question often raised as to whether all women can nurse their infants is still a mooted point but certain it is that by a process of education many more could be taught to nurse their infants for all or part of the time. Holt, in 1909, estimated that not over 25 per cent. of the well-to-do and cultured of New York city who had earnestly and intelligently attempted to nurse had succeeded in doing so for as long as three months. At the other extreme we find Mme. Dluski's figures from the department of Pinard in Paris showing that 99 per cent. are able to nurse their children. Between these extremes one finds estimates such as 66 per cent. for France, 90 per cent. for parts of New York, 96 per cent. for Munich, and so on. Throughout the world in recent years wherever propaganda has been instituted that mothers ought to nurse their infants greater numbers have been able to do so. Jacobi said that "100 per cent. of our women can be made to nurse, even the 'flower and fashion' of the land."

In some places the percentage of mothers who actually suckle their children is extremely low. In 1885 in Berlin there were only 55 per cent. of nursing mothers, five years later but 31.4 and ten years later only 24.6 per cent. In Leipzig only 27 per cent. nurse their children six months. In contrast to these figures is the state-

ment from the Heidelberg clinic, where in three years the percentage of mothers nursing their children increased from 64 to 86 per cent.

In America we have similar results to show what can be done along these lines. Schwarz of New York in a study of 1500 clinic cases reported that with careful and intelligent instruction 96 per cent. of the infants were able to take the breast for one month or less, 88 per cent. were at the breast for three months, and 77 per cent. for six months. Out of the 1500 women six were reported who could not nurse on account of inverted nipples and only four were found who had no milk at all. Jacobi states that "there is no such thing as absolute absence of milk secretion, and the attentive doctor and the diligent midwife know that our women poor and sick suffer from no organic mammary degeneration."

In Berlin where a great deal of trouble in investigating nutritional diseases is taken, it was discovered that out of 43,423 deaths of infants less than one year of age in which the mode of feeding could be ascertained, only 3,995 were breast-fed children, whereas the remainder, 39,428, were bottle-fed. Similar figures from other countries may be cited such as those from Boston where Davis found that one out of every thirty babies dies in the first year if breast fed. The death rate in Boston, therefore, would be 60 per cent. less if all babies were breast-fed. In short, from seven to ten times as many bottle-fed babies die as breast-fed babies in one year. Moreover, careful analysis of the deaths from gastro-intestinal disease, by months throughout the year, and in relation to the method of feeding, shows that in the case of breast-fed infants the death rate from diseases of the digestive system remains at a constant low level throughout the year, and the mortality from this cause among them is very little, if at all, greater in the heated term than in the winter months. The great increase in the mortality in the summer months is almost wholly made up of the deaths of the artificially fed. The British government's report on infant mortality in its final summary states that "the abandonment of breast feeding without adequate cause is a most important factor of excessive infant mortality." The conclusion is therefore irresistible that the method of feeding is the most potent single factor influencing the fate of the newborn child.

It is barely forty years since the new interest in the lives of infants became manifest. This has come about partly through a growth in humanitarian ideas regarding the value of infant life which has been accomplished by a desire to ameliorate social conditions upon which a high infant mortality depends. This was

first felt by individuals but soon came to be appreciated by municipalities and finally by states and nations. Together with the growth of the humanitarian idea has been the development of sanitary science and preventive medicine and the great advances in our knowledge of the diseases of children which made it possible to check, to some degree at least, the enormous infant death rate which had continued almost since vital statistics were first kept.

In 1844 Marbeau, mayor of Paris, conceived the idea of the *Creche*, which rapidly spread throughout France and a few years later to Austria, Italy, and Germany, and in a very short time throughout Europe. While the *Creche* has perhaps not been a large factor in reducing infant mortality, it has done much in calling attention to the neglect of infants of working women in cities and arousing public interest in the welfare of infants generally. In 1865 the Society for Protection of Infants was organized in France, its chief objects being to encourage maternal nursing and to give instruction to the poorer classes before and after confinement.

In 1892 Budin, of Paris, was struck with the frequency with which it was found that the first child had died when mothers had been delivered of lusty children, had been discharged with both doing well, and had returned to the clinic for a second pregnancy. All kinds of faults had been committed; possibly instead of continuing to nurse the child, the mother had put it on the bottle or gone to work, or it had received a cabbage, soup, or even fed on solid food; in fact anything might have taken place, the result of ignorance conjoined with superstition. Budin determined thereafter to have these children under constant supervision directly after birth, and the consultation for nurslings was established. The results were remarkable. Out of one lot of 716 babies but 26 deaths took place, and of these 26 deaths but one of gastro-intestinal trouble. In other words, the death rate among these children was less than twice the general death rate of adults, whereas under ordinary circumstances the death rate of infants in their first year is from seven to ten times as great. Similar consultations have been instituted all over the world with like gratifying results.

Two years later Dr. Dufour established the prototype of the infant milk depot which was called "*Goutte de Lait*" or "Drop of Milk" and these may be considered as marking the beginning of the modern movement for the reduction of infant mortality. They have spread all over the civilized world and have proved to be, when properly conducted, one of the most effective agencies known for the reduction of infant mortality. At present there are scattered

over most of the cities of the States similar milk depots to that of the New York Milk Committee, the Boston Babies Milk and Hygiene Association, the Infant Welfare Society of Chicago, Straus Laboratories in New York and Washington, the Babies Hospital and Dispensary of Cleveland. Although the number of babies reached by such institutions is only a drop in an ocean, still the presence of consultations for nurslings and milk depots has effected a small but decided drop in the infant mortality in the localities where they are situated. The mortality among babies attending these institutions is usually one-half that of the city in general.

In addition to the work of the consultations for nurslings and infant milk depots other forms of activities have been established to which we will briefly refer.

In order to assist mothers in nursing babies many infant milk depots adopt the plan of feeding their milk to the baby through the mother, that is they give the mother the milk to drink, thus assisting her to an abundant breast supply. Further, the nurses and doctors insist on maternal nursing. In France there are restaurants where the mothers may receive two good meals a day, the only qualification being that she is actually engaged in nursing a child. Rest homes for prospective mothers where they may go and obtain, free of charge, rest and good food before delivery have been established. In this way they obtain freedom from the depressing effects of toil at a critical period, with the result of effecting not only a notable increase in the weight and strength of the child at birth, but also of increasing the mother's ability to nurse the infant.

In Europe at the present day almost every government is engaged more or less actively in infant welfare work. The greatest attention is being directed toward the supervision of children deprived of their natural protectors and placed out with foster parents. National laws defining the responsibility of the State and laying down general principles for safeguarding such children, exist in Germany, Austria, Hungary, France, Spain, Norway, Sweden, Holland, Roumania, Bulgaria, Russia and other countries. In Hungary the State is particularly far reaching. The law there declares it to be the right of every child in Hungary under fifteen years of age to be given care, nourishment, and a home. In Germany the care of the needy and sick children has been developed to a high degree in Charlottenburg. Through a system of public and private coöperation immediate care in case of need or emergency is forthcoming. Dangerous delay due to official red tape is

avoided. This protection of the life and health of the child begins before its birth and continues through school age. Another interesting phase of the work in Germany is the interest being taken by industrial concerns in infant welfare work. Three manufacturing establishments maintain infant consultations for their workers. Two of them pay nursing premiums either in money or in kind, or both, one of these concerns in 1910 paid 4,135 Marks for this purpose and also provided extra food for the nursing mother.

At this juncture a short account of what our neighbours are doing across the line would not come amiss, as it is there that the most rapid and effective progress, especially in New York City, has taken place in the past few years. Up to the year 1902 the work in New York was somewhat desultory, the department of health confining its work only to the summer months. Not until 1908 was the real campaign against infant mortality begun, when the Division of Child Hygiene of the Health Department was organized to which all the work done by the department for infants was entrusted. An attempt was made for the first time to coördinate the different agencies working in the city for the same end by a series of conferences in the summer on the care of babies. The city was divided into districts which made it possible to reach all sick infants. Seven milk depots were opened in addition to those already in operation by private agencies. Talks to mothers were given in many centres on the hygiene and feeding of their infants and much literature was distributed. The work continued during the following two years, each season seeing better organization and more effective service. By 1911 most workers in this field having become convinced by the experience of the last three or four years of the value of the milk depot as an agency for saving babies in summer, an increased number of such stations were opened. In all 79 depots were opened and 150 different bodies working for child welfare and public health were federated into an Infant Welfare Association, thus securing harmony and coöperation, preventing duplication of effort, and fixing standard methods of working and recording results. It has united effort and through its efficient secretary it has enlisted the coöperation of the press and done much to arouse public interest and shape public policy. Owing to the fact that there are a large number of working mothers in New York City and in consequence of the work of the home falling on younger children, Dr. Josephine Baker organized in 1911 the "League of Little Mothers," its object being the teaching during the summer months of the principles of infant feeding and hygiene.

At present it has an enrolled membership of 20,000, they have weekly meetings and talks are given by physicians and nurses. The amount of interest awakened is remarkable and it has been found that the girls learn easily and readily put their ideas into practice.

Nowhere in the world does the problem of infant mortality present greater coherent difficulties than in New York, from the heterogeneous character of the population and an overcrowding which in certain districts is not equalled in any city of the world. European capitals really know very little about the severe intestinal diseases that exist in the United States, and what has been accomplished in New York is so conspicuous that the methods may well be taken as a guide for other cities.

The essential parts of New York's campaign have been: visits by trained nurses to the homes of ignorant mothers of newborn babies; extensive development of the milk depot and infant consultation; federation in one organization of all the agencies engaged in infant welfare work. Efforts in other cities to be successful must be made along these or similar lines. The time when individual effort can cope with this problem has passed. The present conditions call for an organized campaign in Canada, planned on scientific lines, and carried out with a businesslike efficiency. Only such efforts can meet the complex situation as it exists in our large cities to-day.

The results of this campaign have been efficiently summed up by L. E. Holt in the Babies' Hospital Report, which says: "In 1888 with a population of 1,522,341 the infant deaths in New York were 10,411. In 1912 with a population of 2,969,220 the infant deaths were but 8,797. Thus, although the city is almost twice as large as it was twenty-five years ago, the actual deaths are 15 per cent. less. Had the old rate prevailed in 1912 there would have been 11,095 more deaths than there were." At present there are 91 milk depots in New York and in all 204 welfare stations scattered throughout the States in 39 cities and small towns.

INFANT MORTALITY IN CANADA. The following table was compiled from figures obtained from the Third Infant Mortality Report by Dr. Helen MacMurchy, from R. E. Mills, vital statistician for Toronto, and in some cases directly from the health officers of the respective cities. Included in this is the last report (1913) for New York City for comparison.

TABLE I.

<i>Cities</i>	<i>Deaths per 1,000 births</i>
Montreal.....	290
Brandon.....	269
Ottawa.....	256
Port Arthur.....	248
Chatham.....	229
Fort William.....	227
Halifax.....	204
St. Catharines.....	194
Kingston.....	186
Hamilton.....	173
Brantford.....	173
Edmonton.....	171
Winnipeg.....	169
London.....	164
Niagara Falls.....	151
Toronto.....	144
Guelph.....	142
Calgary.....	130
Peterboro.....	122
Portage la Prairie.....	114
New York City.....	102

From the same sources we obtained the infant mortality in the following provinces, no figures were available from the other provinces.

TABLE II.

<i>Province</i>	<i>Deaths per 1,000 births</i>
Manitoba.....	149
Ontario.....	131
Saskatchewan.....	130
Nova Scotia.....	111
Prince Edward Island.....	104

From a mere glance at Table I it is seen that eight of the twenty Canadian cities have an infant mortality of twice that of New York City, while Montreal has three times the mortality with a population of a little less than one-sixth that of New York. The American metropolis is an index of what can be accomplished against odds which our Canadian cities do not have to contend with. One of the most astonishing revelations is to see the new Western cities at the head of the list with a mortality of 269, 248, and 227 per 1,000 births. As seen from Table II. the average mortality of the five provinces from which definite information was obtained is 125.

Circulars were sent to nine of the leading cities in the Dominion asking for information concerning mortality and means of prevention. Table III. indicates the information obtained.

TABLE III.

[illegible]

In these nine cities the mortality ranges from one and one-half to three times that of New York. Only four of the cities are exerting any special effort toward the reduction of infant mortality, and of these four, with the exception of Hamilton, all the efforts have been undertaken during the last year or two and comparative results are not available. The city of Hamilton deserves special mention. They have a Babies' Dispensary at which milk is distributed and infant consultations are held. Although the total death rate has increased in the city with the population, the workers have succeeded in reducing the deaths from gastro-intestinal affections from 500 per thousand in 1910 to 237.1 per thousand in 1913, or a reduction of 52 per cent. in the three years of operation.

Not included in Table III is Fort William, one of the most rapidly growing and progressive cities of the West, which affords an example of what can be accomplished along these lines. Dr. Wodehouse, medical health officer, with the aid of a visiting nurse, was able to reduce the number of deaths from gastro-intestinal affections in the summer months from 63 in 1910 to 6 in 1912, and in the years 1911 and 1912 effected a reduction of 50 per cent. in the mortality of bottle-fed babies.

Toronto has a population of 510,000 of which 10,960 or 2.15 per cent. are under one year, and 21,070 or 4.13 per cent. are under two years. To care for these there are the following:

1. The Hospital for Sick Children, with accommodation for 250 patients. The baby ward contains thirty cots. It has not been found wise to transfer babies to the Lakeside Home at Toronto Island, which is a branch of the hospital, on account of the extreme variability in temperature at that place. In connexion with the hospital, through the munificence of Mr. J. Ross Robertson, there is a well-equipped pasteurizing plant in which 150 gallons of certified milk are scientifically pasteurized daily and feedings prepared according to standard formulæ and by special prescription from physicians. Seven milk depots throughout the city receive their supply from this source.

2. The Infants' Home and Infirmary takes care of destitute infants with or without their mothers. For the year ending September 30th, 1913, the following is the thirty-eighth annual report: babies cared for during the year, 289; babies died during the year, 76. A recent regulation has been passed whereby infants are not received without their mothers.

3. St. Vincent's Home cares for destitute foundlings and illegitimate infants and averages 100 cases in residence. About

twenty maternity cases are also provided for in a separate ward.

4. The Haven and Prison Gate Mission last year furnished accommodation for sixty-one infants of which fifty-eight were illegitimate. Nine died.

5. The Sacred Heart Orphanage provides for and educates Roman Catholic children and places homeless children in foster homes. The average number of inmates is 200.

There are forty-two licensed baby homes and twelve maternity homes which are under the supervision of the Department of Public Health. In these forty-two homes there are ninety-one babies who are cared for by their foster mothers. Fifteen of these are for adoption, the remainder will ultimately be taken by their own mothers. Four of the public hospitals maintain maternity wards, and 1,260 children were born there during the last year. There are five rescue homes to which infants and their mothers may be referred from the maternity wards if they have no home of their own.

Public health nurses are responsible for all forms of public health work. This necessarily includes prenatal care, infant welfare, the care of children, tuberculosis, contagion, and a certain amount of miscellaneous household and sanitary instruction. An unnecessary number of visitors in the individual home is in this way prevented. The nurses are thoroughly trained graduates. To maintain this efficiency an examination question on infant welfare work is sent out daily and each nurse sends in a written reply to the director. This has proved to be an excellent plan.

In addition to the public health nurses there are four visiting nursing agencies who do the bulk of the obstetrical work of the city. There are eight day nurseries or *creches* throughout the city which admit infants for the day while their mothers go to work. They also provide work for the mothers as far as possible. There are eight agencies, mostly settlements, which carry on fresh air work. They provide vacations in the country and trips across the lake for needy mothers and babies. Part of the funds for this are supplied by one of the city newspapers. An ice fund is provided by two women's organizations. Private organizations supply food and clothing for needy cases. There are six local Neighborhood Workers' Associations which coördinate all these philanthropies and see that there is no overlapping and that none are left out.

The Department of Public Health has a Division of Public Service which reports all cases needing social attention to the appropriate Social Agency and sends a representative to the

meetings of the Neighborhood Workers' Association. Dependent or neglected children can be removed from their parents and made temporary wards of the Children's Aid Society for the purpose of placing them into other families for adoption. This is done through the Juvenile Court every Wednesday afternoon.

In June, 1914, the Board of Health of Toronto established a Division of Child Hygiene with instructions to investigate the infant health of the city and make an attempt to reduce the infant mortality. A filing system was established at the outset in which all births are registered as soon as reported and all available information placed on the filing card for each individual child. Within a few hours of the reporting of the birth, one of the public health nurses, of whom there are thirty-one, visits the home and investigates the surroundings of the child. Where a physician is in attendance, nothing further is done, but where there is an obvious need, this is at once reported to the department, and where there is no medical attendant the mothers are encouraged to bring their babies to the "well baby clinics" as often as every two weeks. Here the babies are weighed and have their feedings supervised. The well baby clinics, of which there are ten, have been established as far as possible in association with previously existing institutions, such as the Hospital for Sick Children, day nurseries, settlements, playgrounds, etc., on the assumption that coöperative work will assure the best results. Seven of the well baby clinics are associated with milk stations which receive their supply from the pasteurizing plant at the Hospital for Sick Children. In all the clinics consultations are held twice a week and the sick babies are referred to the Hospital for Sick Children. A doctor and two nurses are in attendance at each clinic. The doctors interested in this work have monthly meetings at which papers are read and problems which arise out of their work are discussed. The average attendance at the clinics is between twenty and thirty, which is encouraging in view of the fact that most of them have been operating for less than one month. The clinics were established in the most needy districts as shown by a mortality pin map of the city prepared in 1913.

The medical appointments are made by the professor of pediatrics of Toronto University and the medical officer of health. It is hoped to continue the clinics throughout the whole year, and if possible in 1915 to increase the number to twenty-five, as it has been found essential to have a well baby clinic for every 20,000 population. Pharmaceutical equipment and medical supplies,

scales, history forms, and printed instructions are supplied to each clinic by the city. The city health laboratory provides slides, culture tubes, etc., and does the laboratory work for the clinics. Pamphlets on infant hygiene are sent to each mother as soon as the birth of her child is reported. These are also distributed at the clinics and by the nurses during their visiting.

At the end of each clinic the nurse makes a summary which is sent to the central office and details regarding each child are transferred to the central filing system, so that at the end of the year one has an accurate account of every child under observation, including a record of the condition found each time a visit was made to any of the clinics. Plans are in progress for the acquisition of a floating sanatorium whereby the most needy cases will be able to spend the day on the water under a more favourable environment. Since July 1st, 1914, the scheme of a floating sanatorium has become a reality. Through the generosity of the Toronto Ferry Company one of their vessels has been available three afternoons each week for a four hour cruise. The boat has been equipped with hammocks, distilled water, etc., and three of the Public Health nurses prepare free feedings for the babies and refreshment for the mothers. About 300 mothers and babies are taken on each trip. Its therapeutic value is most convincing.

In connexion with the Division of Child Hygiene there is in process of establishment a Wet-Nurse Bureau carried on along the following plan: The maternity wards of the hospitals and maternity homes throughout the city send in the names of women who are willing to act as wet nurses. These women are immediately examined for tuberculosis and a Wassermann test is made in each case. Those who are found free from tuberculosis and syphilis are available for the physicians, on payment of the fee for the examination. It is hoped that this Wet-Nurse Bureau will be of much service during the summer. The spirit of coöperation pervades practically all the institutions doing infant welfare work and this in a large measure accounts for the success of the movement so far.

VITAL STATISTICS IN TORONTO.—The value of vital statistics in regard to infant mortality in Toronto as elsewhere throughout Canada is greatly lessened by the fact that the birth figures are not accurate on account of the incompleteness of the registration of births. Up to 1912 this error probably amounted to over 20 per cent. In 1913 the registration of births was somewhat more complete. Accordingly, infant deaths computed from these birth figures will contain this error and the apparent infant death rate

will be higher than it really is, conditions being represented as much worse than they actually are.

TABLE IV

SHOWING MORTALITY IN TORONTO OF INFANTS UNDER ONE YEAR FROM 1897 TO 1913.

Year.	Estimated Population of Toronto.	Births, excluding still births.	Deaths under 1 year, all causes.	Infant death rate, all causes.	Deaths from digestive diseases under 1 year.	Deaths from respiratory diseases under 1 year.	Still births.
1913	486,000	14,100x	1,877	..	639	155	663
1912	445,000	10,960	1,584	144.5*	426	187	572
1911	406,000	10,046x	1,432	..	403	146	512
1910	370,000	8,989x	1,420	..	455	135	434
1909	335,000	7,848x	1,410	..	351	141	317
1908	310,000	7,813	1,215	155.5	296	143	320
1907	288,000	6,591	976	148.1	251	119	337
1906	273,000	5,869	918	156.4	246	99	277
1905	257,000	5,694	935	164.2	213	80	273
1904	242,000	5,182	903	174.3	176	80	258
1903	234,000	4,958	827	166.8	174	88	197
1902	226,000	4,953	713	144.0	129	71	171
1901	220,000	4,354	711	163.3	111	76	175
1900	214,000	4,460	880	197.3	256	111	184
1899	207,000	3,993	777	194.6	196	80	179
1898	202,000	4,119	699	169.7	173	75	187
1897	197,000	4,075	664	162.9	...	...	...

x Includes stillbirths. Correction not available.

Note that deaths from digestive diseases and stillbirths have increased out of all proportion to the population.

*Since birth registration is incomplete to the extent of from 20 to 25 per cent., according to the estimate of the statistician of the department of public Health, this figure is too high to that extent and the correct figure is between 110 and 115.

TABLE V

SHOWING DEATHS FROM DIARRHOEA AND ENTERITIS OF INFANTS UNDER TWO YEARS—
JANUARY 1910, TO MAY, 1914.

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1914	16	7	11	10	16	..	..	..	..	..	..	..	..
1913	10	9	16	17	18	23	81	217	149	51	24	22	637
1912	20	11	20	17	21	10	63	84	78	39	30	9	402
1911	16	14	11	6	20	12	68	78	70	23	14	9	341
1910	12	25	15	14	12	15	75	79	42	18	16	4	327

The large proportion of these deaths occur during the months of July, August, and September. This was especially marked during the summer of 1913.

This great increase in mortality cannot be explained by excessive heat or humidity as the temperature and humidity curves were approximately the same during 1912 and 1913.

TABLE VI

SHOWING AGE AT DEATH OF INFANTS UNDER TWO YEARS IN TORONTO, 1913
(*Exclusive of stillbirths.*)

Under one week.....	458
One week to one month.....	259
One month to three months.....	345
Three months to six months.....	383
Six months to one year.....	432
	<hr/>
	1877
One year.....	248
	<hr/>
Total under two years.....	2125

Note that more babies died during the first week of life than during the entire latter six months of the first year.

The following is a summary of 120 infant deaths during the summer of 1913, among cases visited by the public health nurses: 48 died during the first 3 months; 94 during the first 6 months; 60 during the month of August; 117 during the months of July, August and September. Eleven only were breast-fed. Other etiological factors were stubbornness on the part of the mothers and refusal to obey instructions, preferring rather to use patent foods; mother deserted by husband; illegitimacy.

CONCLUSIONS. 1. We would suggest that the law requiring the registration of births be enforced in such a manner that upon neglect of the physician or midwife a fine be imposed, and further that every child throughout the Dominion be compelled to present a birth certificate before admission to a public or private school or institution. This will of necessity afford an initial increase of work upon the local board of health but eventually will serve to detect the offenders who may be dealt with accordingly.

2. Several things are essential to the successful operation of a milk depot. The work must be done by physicians, not trained nurses or social workers. The physicians themselves must be properly trained for their task and must be paid for it. The best results cannot be obtained by placing this responsibility on voluntary workers. The milk depot, unless properly conducted, by increasing the facilities for artificial feeding, may tend to discourage maternal nursing and possibly increase infant mortality. While the distribution of clean, pure milk is important, it should be realized that the instruction of the mother and continuous observation of the child play a larger part. Everything possible should be done to encourage breast feeding and to aid it. The inexperienced mother is thus guided not by the advice of ignorant and super-

stitious relations or friends, but by an intelligent and experienced person who not only tells her what to do but shows her how to do it.

3. The expenses of conducting milk depots and consultations upon a large scale is so great that private philanthropy cannot be expected to bear it. They should be supported by the municipality. In this way standardization of methods, proper supervision and coöperation may all be secured.

4. A milk depot and visiting nurse should be available for every twenty thousand inhabitants.

5. Our industries are improving, our commerce is enlarging, and our wealth accumulating. Modern industrial methods have changed all the habits and surroundings of most of our people. But though this happened two generations ago, at least in Canada, we have never yet emancipated ourselves from that social ignorance and social incompetence which either cannot see these changes or will not do anything to alleviate them. Social action is the only possible action. Individual action cannot deal with such a situation. National, governmental, collective and municipal—not individual action—can save the baby.

SINCE the Hindus in Vancouver were able to collect the sum of \$14,000 to pay charter money for the *Komagata Maru*, it was felt that they could afford to pay for medical treatment given to their countrymen and accordingly a resolution was passed on June 18th by the directors of the Vancouver General Hospital to call attention to the fact that during the past seven years at least five thousand dollars had been expended on the treatment of Hindus and that it had been found impossible to collect the money, and therefore that an attempt should be made to collect the amount from Bangwan Singh or some other leader of the Hindu community.

CARDIAC HYPERTROPHY

BY THOS. F. COTTON, M.D., MONTREAL

UP to the time of Harvey, alterations in the size of the heart were looked upon as curiosities; and it was not until his great discovery of the circulation that these deviations from the normal were associated with its function as a central pumping station. Observers had noted that skeletal muscle increased in size with increased work; it was natural then, in the light of the Harveian conception of the heart's function, to assume that the heart's size was dependent upon the work done by it. With this object physiologists and pathologists endeavoured to determine by linear and volume measures the normal size of the heart. These methods were crude and inexact, since in estimating its volume or in measuring the thickness of the ventricular walls the heart in systole and in diastole gave quite different results.

It was many years later, in 1881, that W. Müller, a Leipzig pathologist, introduced a technique which enabled him to weigh exactly the heart *in toto*, as well as the right and left ventricle. The large vessels were cut close to the valves, the fat and visceral pericardium were dissected away, the auricles were separated from the ventricles by cutting through the auriculo-ventricular groove, and a longitudinal incision was made on either side of the inter-ventricular septum. He weighed first the whole heart, then the ventricles, and compared the whole weight with that of the body, and the weight of one ventricle with the other. He observed, after recording the separate weights of fifteen hundred hearts, that in individuals of about the same age the relative weights of the body and heart were the same, and that after the fifteenth year the heart of the male was heavier than that of the female. Later, in 1900, Hirsch found that the cubic measure of the body itself had no relation to the development of the heart muscle; such relationship between body weight and heart weight being entirely dependent upon the muscular development of the body. In other words, that the size of the heart is the expression of the work done by it.

In 1906, Kulbs found that in young dogs of the same litter, sex and weight, those having work to do (running on an inclined plane) showed an absolute and relative increase in the size of the heart; that the relative weights of the heart and body of the working dog approached those of the deer, while the weights of the control dog were more nearly those of the cow; that the development of the body musculature, however, did not correspond exactly with that of the heart. Grober made observations on a series of dogs, and noted that in those made to undergo forced muscular activity, as compared with those given complete rest, there was a relative increase in the weight of the heart, and that this increase was more in the left than the right ventricle. The explanation he thought lay in the additional work done by the heart; the faster pulse rate, the greater quantity of blood expelled by the heart, and the higher blood pressure, all being the expression of a heavier burden put upon the heart. He also observed that with those smaller animals, who in their life struggle are obliged to escape suddenly from their enemies, if a hypertrophy developed it was right rather than left. This might be due to hypertension in the pulmonary artery, the result of increased peripheral resistance caused by the development of an acute pulmonary emphysema.

That there is an actual hypertrophy of the heart muscle cannot be denied, for Goldenburg had clearly demonstrated that the muscle fibres are increased in size, that the nuclei are larger than normal, and that too, there is generally present a hyperplasia. The normal heart possesses a reserve force, the loss of which Mackenzie emphasizes as a cause of heart failure. It is this property of the heart muscle which enables it to maintain the circulation when increased work is required of it. The hypertrophied heart must also have this power of accommodating itself to altered conditions, otherwise there would be evidences of a failing heart.

From the above-mentioned observations we may then conclude that hand in hand with muscular activity there is a corresponding increase in the size of the heart; that there is a work hypertrophy of the heart muscle; and that this organ by retaining its power of accommodation, is enabled to maintain the circulation. May we then ascribe the development of cardiac hypertrophy to all those processes which increase the work of the heart muscle? Is the hypertrophy the result of the heart expelling a normal quantity of blood at an enhanced rate, or a larger amount at a normal rate, or is the increased peripheral resistance a factor in its production? We know that hypertension is associated with cardiac enlargement,

so too are the valvular lesions. From the records of the sphygmomanometer and the findings of the stethoscope are we justified in assuming that these are the principal factors in the production of cardiac hypertrophy? If so, then we must admit that hypertension in the systemic circulation should place an added burden on the left heart, and a left hypertrophy should predominate. Such a hypertrophy should result also from an aortic insufficiency, for with the back flow in diastole a greater column of blood must be expelled by the left ventricle during systole. Do the facts bear out this assumption?

Lewis had observed in taking electrocardiographic records at the University College Hospital, London, that many of his aortic and renal cases, where he had expected a left hypertrophy, showed a right predominance, or no predominance. This suggested to him the exact weighing of the right and left ventricles, and the correlating of these weights with the clinical observations. This work he commenced in the winter of 1913, and later in the spring I joined him, and together we recorded the clinical symptoms and signs and made exact weighings of one hundred cases; since returning to Canada I have added my observations on fifty cases to our series. The technique I shall only briefly describe, for he has written me that he is preparing a paper on the methods employed. The hearts with the vessels cut short were weighed, then placed in 10 per cent. formalin and later in 80 per cent. alcohol. The auricles were separated from the ventricles by cutting through the auriculo-ventricular groove, and the pericardium, fat, and valves were dissected away. A transverse incision was made dividing the ventricles into upper and lower halves, and then two longitudinal incisions on either side of the septum, separating the ventricles from one another at their line of junction with the septum. The ventricles and septum were then placed in water and weighed several times at intervals of four or five days. When on two occasions the values remained the same, these were recorded as representing fairly accurately the weight of the ventricles and septum *in situ*. By comparing these weights we could express in figures the degree of hypertrophy predominating in one or the other chamber. Of our series of cases fifty were controls, and in these we found that the average relative weights of the right and left ventricles were as 1 is to 1.77; i.e., the left ventricle was approximately $1\frac{3}{4}$ times heavier than the right. You will readily understand then that values less than 1.77 will represent increase in weight of the right ventricle, and values greater than 1.77 will

express increase in weight of the left ventricle. I shall not burden you with figures, but shall content myself with summing up in a general way the results obtained by us.

Of the kidney cases in our series the greater number were of the interstitial type with hypertension and cardiac enlargement. The majority belonged to that large group of cardio-renal cases with symptoms and signs referable to a failing heart rather than renal insufficiency; some were pure renal cases presenting no signs of cardiac failure. In all the increase in weight of the whole heart was constant; the values of the relative weights of the ventricles, however, varied within wide limits. In some there was a marked hypertrophy of the left ventricle, in a few right hypertrophy predominated, while in many the normal relationship of the two ventricles was maintained. Microscopic sections showed myocardial degeneration in many; this was difficult to establish in a few.

Now in these cases with thickened arteries, arterial hypertension, thrusting apical impulse and accentuated second sound, we anticipated a left hypertrophy, for we know that the left heart has had a greater burden put upon it. But how are we to explain the general hypertrophy and in some instances a right predominance? If we look upon the development of cardiac hypertrophy as the resultant of those processes which increase the work of the heart, then we are permitted to regard left hypertrophy as caused by increased demands placed upon the left ventricle, a general hypertrophy as the result of additional work imposed equally upon the whole heart, and a right hypertrophy as the expression of a greater burden borne by the right ventricle. If these processes are extracardial, then they affect in some principally the left ventricle; in others the whole heart is involved, or the right ventricle may be the chief sufferer. Of these forces I refer principally to increased peripheral resistance. With the increase in this peripheral resistance there is a corresponding increase in the intracardiac pressure. Normally this intracardiac pressure is two or three times greater in the left than the right ventricle, so we may say that the work done by the left is two to three times greater than that done by the right. Now if the arterial tension is increased more in the systemic than in the pulmonary circulation, then we may conclude that a correspondingly greater amount of work is required by the left than the right heart; the reverse too is true. But is this the explanation of the left predominance in one, the general hypertrophy in another, or right predominance in a third? I do not think that our clinical evidence is such that we may draw such conclusions, for the sub-

jective symptoms and physical signs are the same whether we have a heaving apical impulse or a thrusting epigastric pulsation. May we not look then for the cause of the hypertrophy within the heart muscle itself? Is it not possible that the altered state of the heart muscle may play an important rôle in the development of hypertrophy in the different chambers of the heart? We know that myocarditis may be and often is associated with hypertrophy, and that a cor bovinum may result therefrom, yet no mechanical factor can be found to explain such enlargement. We know, too, that in other tissues of the body hyperplasia and hypertrophy may be the result of inflammation; and perhaps the epithelial cell is the best example of this phenomenon. Is it not possible to conceive that a normal heart develops sufficient energy to overcome the opposing forces? Increase these forces and the heart's energy increases with them and hypertrophy results. A weakened heart, that is, one with degeneration of the muscle fibres as in myocarditis, will respond in the same way to a normal peripheral resistance as does a normal heart muscle to an increased peripheral resistance. Now if only a part of the cardiac musculature shows degeneration, then that part will hypertrophy. In this way we might explain in part the general hypertrophy of the right ventricle.

Now a word about the hypertrophied heart associated with valvular lesions. It has long been taught that aortic insufficiency leads to hypertrophy of the left ventricle, and that narrowing of the mitral valve results in a right hypertrophy. Of our aortic cases we found that though in many the hypertrophy was borne by the left ventricle, we not uncommonly found a general hypertrophy, and in some a right hypertrophy, and this distribution seemed to bear no relation to the severity of the valvular lesion. Here, undoubtedly, the back flow of blood during diastole into the left ventricle must increase the work of that chamber, and will explain in part the resulting hypertrophy. We know, too, from animal experimentation that if the valve be sufficiently incompetent, the left ventricle can no longer expel in systole the increased amount of blood received in diastole, and the added work put upon the left auricle and right ventricle will lead to hypertrophy of the right ventricle. Must we then look upon the valvular defect as the essential factor in the production of the hypertrophy? If so, we should expect to find in those hearts with a general or right-sided hypertrophy, a greater incompetency of the aortic valves. In our cases we did not observe any difference in the valvular lesions corresponding with the hypertrophy present. We did, however,

note that a greater or less degree of muscular degeneration was generally present. May we not here, too, as in our renal cases, look upon the degenerated myocardium as playing an important rôle in the development of the hypertrophy?

In those hearts with mitral insufficiency, we expected to find hypertrophy of the left ventricle; but here, too, as in aortic insufficiency, such a hypertrophy was not a constant finding. We found, it is true, in the majority of these hearts hypertrophy more developed in the left chamber, but in many the hypertrophy was general, the relative weights of the two ventricles being within normal limits, while in a few hypertrophy of the right ventricle predominated.

Only in one group of cases did our results corroborate the back pressure theory as an explanation of the hypertrophy associated with valvular lesions. In those hearts with mitral stenosis uncomplicated by any other valvular lesion, we found in every instance hypertrophy of the right ventricle predominating.

Of those hearts with degeneration of the myocardium but with the valves quite intact, where the leaking or narrowed valve could not be a factor in embarrassing the heart's action, our results in the main corresponded with our renal hearts. The hypertrophy was oftener of the left ventricle, not uncommonly the whole heart was increased in size, and occasionally the ratio of the ventricular weights was below 1.77, which we found to be the normal.

One word in conclusion. My aim in preparing this paper has been to emphasize the rôle of the myocardium in the production of cardiac hypertrophy; and for this purpose I have made use of Lewis' and my observations. The actual details of our work I have reserved for future publication; for the time at my disposal on this occasion does not permit me to go more fully into the results of our investigations.

THE gross death rate from typhoid fever in Toronto last year was 10.4 per 100,000 population. If the cases contracted outside the city are deducted, however, the death rate was only 5.3, which, with the exception of New York, is the lowest rate for cities on this continent with a population of over 350,000. In 1910 the gross death rate from typhoid in Toronto amounted to 40.8 per 100,000. The decrease is due largely to the improved water supply.

Editorial

THE ST. JOHN MEETING

THE forty-seventh annual meeting of the Canadian Medical Association was held in St. John, N.B., from Tuesday, to Friday, July 7th to 10th. To say that this meeting was a most successful one is to sum up the opinions expressed, invariably in terms of appreciation, by those who took part. While the western provinces were not well represented numerically, the attendance from the eastern half of the country was very gratifying. In all, two hundred and seventy-eight members registered, of whom eighty were from Ontario and Quebec.

The programme was an excellent one. The President's address and the address in medicine were published in the last number of the Journal. The other two addresses, both of which were very fully illustrated, appear in this issue. The public lecture by Dr. Hodgetts on Health Problems in Canada was of great interest both to the profession and laity, who attended in large numbers.

Intestinal stasis is a question of timely interest and a matter of controversy in the medical world; and this subject was fully discussed before the combined Sections from the points of view of the anatomist, physician, surgeon, and radiologist. The evidence furnished by the *x*-rays before and after operation led to the conclusion that only when the presence of distinct organic disease was proved, is surgical interference justifiable. The basis of difference between the surgeon and physician rests chiefly upon the uncertainty as to what constitutes organic disease, some surgeons regarding kinks and flexures of the intestine as such.

Of the work of the individual Sections it is impossible to speak in detail. Special reference must, however, be made to the youngest Section, that on *x*-rays, which repeated its success of last year. It was undoubtedly the most important meeting of radiologists that has taken place in Canada. Six well-known specialists from the United States participated, amongst them Dr. Case and Dr. Cole, both of whom exhibited beautiful series of plates which were the admiration of the expert and a revelation to the uninitiated. The programme in the Public Health Section again served to emphasize the ever-increasing importance of this branch of the profession, and also drew attention to the value of the work which our army medical men are doing. Some important reports were presented and recommendations made, which will be referred to later. It must be admitted, however, that in one or two of the special Sections this year the attendance was quite inadequate. This is very discouraging to contributors who have prepared important papers and come a long distance to present them. It might be well, perhaps, when the meeting is not to be held in a large centre, that a special Section should be omitted for that year, unless a sufficient attendance can be assured.

In connexion with the programme, one is constrained to protest against an evil which recurs year after year, but which was more than usually annoying on this occasion. It goes without saying that it is not always possible for any man, least of all the physician, to leave his work on a definite date in order to fulfil an engagement, no matter how important, which he may have made many months previously. But it is a serious matter, and the climax has surely been reached, when no less than one in four of the contributors do not put in an appearance at the meeting! The programme as arranged was fortunately a very full one and consequently in the larger Sections the absence of several contributors did not unduly curtail the proceedings. But this was not the case with some of the Sections devoted to specialties. Exclusive of the

addresses there were one hundred and ten items on the list, and the number of the contributors was ninety-eight. Of these twenty-six were absent. The final programme was printed earlier than usual this year, and many of these absentees had asked to have their names withdrawn when it was too late. Several sent reasonable excuses, and some were conscientious enough to forward their contributions along with their apologies. But the number of the papers which were not presented was nineteen; and it is evident that some at least of the absentees must have lacked any due appreciation of the responsibility they had incurred.

Two of the affiliated associations were officially represented this year on the Executive Council. Ontario having sent its six delegates and New Brunswick four. It is expected that at future meetings all the provinces will be similarly represented. The most important business transacted was perhaps the amending of the by-laws to permit of affiliated provincial associations holding their annual meetings irrespective of the place of meeting of the national Association. Important reports were presented by the Milk Commission and by the Committee on Public Health Legislation. Little or no progress could be reported with regard to the proposed federal department of health, the necessity for which has been repeatedly urged upon the government by the Association. Provision was made for a strong delegation to further this object at Ottawa. The government is also to be asked to institute improvements in the examination and selection of immigrants. Intending immigrants should be medically examined at the port of departure.

On the last day of the meeting the members were the guests of the General Public Hospital. Very instructive clinics were given by Dr. Armstrong and by Dr. McCrae, of Philadelphia, and Dr. Einhorn, of New York. This fourth day, devoted to clinical work, has been a feature of recent meetings, and the attendance again proved that it is one which is appreciated by the members.

Vancouver was chosen as the place of meeting in 1915. It is something of a jump from one ocean to the other, but the Association can be assured of an enthusiastic welcome in British Columbia, and the facilities for travelling to the Pacific coast will be particularly good next year in connexion with the Panama Exhibition in San Francisco. Dr. R. E. McKechnie, of Vancouver, was elected the next president. Dr. McKechnie is very popular with his colleagues and, moreover, has always been one of the most active friends of the Association in the West.

The entertainment provided for the visitors at St. John was admirably arranged and perfectly carried out in every detail, even to the weather. The luncheons served at the Armoury and the Hospital, where the meetings were held, were a great convenience. But the *pièce de résistance* was the "clam bake". At a charming spot on the shore, an extraordinarily varied diet, some of whose constituents are not recommended to one's patients, was consumed. It was truly a Gargantuan repast. It is safe to say that the hospitality of the profession of St. John will not soon be forgotten.

To the president, Dr. MacLaren, the local secretary, Dr. Bentley, and to the Committee of Arrangements the cordial thanks and congratulations of the Association are due. Their labours have been arduous, but the success of the meeting is their reward.

THE ADDRESS IN SURGERY

THE Address in Surgery which was given by Mr. J. Rutherford Morison, professor of surgery in the University of Durham, was an admirable illustration of the method by which surgery should be taught. He chose for his subject "The Teaching of Surgery." He illustrated the principles of surgery by the dramatic method, and gave an excellent example of the lecture which should be given to a class of students. He began his teaching with an estimate of inflammation in

simple terms, such as might have been employed by Mr. Syme whose work he mentioned with sympathetic approval. And yet it would be unfortunate if students gained the impression that nothing had been accomplished in elucidating the principles of surgery since the days of that great teacher. To him bacteria were mere "hypothetical fungi," whose existence was in the same category as "the spirits and sylphs of the Rosicrucians." Surgery is not so simple an affair as those surgeons supposed it to be, who lived in pre-Pasteurian days and practised pre-Listerian methods. It was easy for these ancient men to state principles briefly when the complexity of the subject was misunderstood. In future lectures Professor Morison would, of course, amplify his teaching, as it is impossible to do everything in an hour; his address was an exposition of a method; he was really a protagonist before students whose place the members were asked to assume.

Professor Morison rather pressed the dramatic method of presentation in furnishing illustrations with the aid of a "magic lantern." Even students of medicine have become too sophisticated to bestow much attention upon these pictures which can never take the place of the thing itself. The machines seldom work in the hands of amateurs in improvised surroundings, and to supply the machinery required for such a display is too heavy a burden for the Local Committee; and few committees will be found, who can so amply meet all the demands which are made upon them, as did the committee at St. John. One operator gave three days of his time without reward as part of the general effort to make the meeting a success, but there is a limit to good nature in other places, if not in St. John. The meeting place of the Section of Medicine had been converted into "a dark room," on the chance that some member might have a picture to show, and unfortunately it is difficult to exclude the light without excluding the air as well. Now that a special Section has been set apart for pictorial representation, it would seem that the Committee of Arrangements might at future meetings spare themselves the labour of providing facilities in other quarters.

THE ADDRESS IN OBSTETRICS

DURING the last few years there has been a strong tendency towards specialism and, indeed, our knowledge of the structure of the human body and of the actions of its various organs has become so extensive, that devotion to the care and knowledge of some one set of organs has become necessary. Some of the specialties have again become split up and subdivided, the division of gynæcology from obstetrics being one of them. It has remained for Ireland, that land of romantic idealism, to remain firm and to see the practical utility of retaining these two subjects under one head. The wisdom of such a course must have been evident to all who were so fortunate as to hear the address in obstetrics delivered at the recent meeting of the Association in St. John, N.B., by Dr. Jellett, Master of the Rotunda Hospital, Dublin. Dr. Jellett took for his subject, "The relation of theory and practice in the operative treatment of genital prolapse." The address was illustrated with several excellent lantern slides. Much has been written on the question as to what constitute the supports of the uterus and vagina, and Dr. Jellett's illustrations and remarks would appear to correlate the different theories and to show that both fascial and muscular structures add their quota in maintaining these organs in their position in the pelvis. He laid great stress upon the fact, which seems to be overlooked by most teachers and writers, that the pelvic anatomy studied on the cadaver must be placed side by side with what is seen in the living person, if correct conclusions are to be drawn. The two points most worthy of note are that no one operation will suit all cases and also that it is useless to endeavour to retain a prolapsed uterus in its proper position by a suspension or fixation operation alone, or by plastic vaginal work alone, but that a combination of the two will almost invariably be required. The Association is to be congratulated on having induced this able representative of such a notable school of

obstetrics as the Dublin Rotunda to travel so great a distance in order to deliver the address in obstetrics, and we will hope to see Dr. Jellett again among us at not too distant a date.

SMALLPOX IN NEW SOUTH WALES

THE recent epidemic of smallpox in New South Wales is reviewed at some length by Dr. E. W. Armstrong in the *Australasian Medical Gazette* of May 2nd, 1914. The disease, in his opinion, was identical with that known as "Cuban itch," "alastrim", "Spanish measles", "milkpox", or "lumberman's itch", which is said to have been prevalent in various parts of America of recent years, and it is possible that the infection was introduced into Sydney from Canada as the first case appears to have been that of a steward on the steamship *Zealandia* which arrived in Sydney from Vancouver on April 12th, 1913. The infection in most cases was of a mild character, the pocks on the whole surface of the body frequently numbering less than twenty, sometimes not more than three or four. The distribution of the rash, however, was the same as in classical smallpox, usually being most marked on the face, the extensor surfaces of the fore-arms, the buttocks and legs. The period of evolution of the lesions was much shortened and a large proportion of the lesions were small and abortive; there was little or no eruptive fever. The infective power of the illness was relatively low, and as a rule it was transmitted only by personal contact. The distribution of the rash and the manner of onset made it perfectly clear that the disease was smallpox and not chicken-pox. Up to December 31st, 1913, 1070 cases were reported. In 69 cases vaccinations had probably taken place in infancy or at least thirteen years before the outbreak, and in 999 cases the patient had never been successfully vaccinated. Instances occurred in which all the children in a family contracted the disease, while the parents escaped: the children had been born in New South Wales and had never been vac-

inated whereas the parents, who were born in Europe, had been vaccinated in infancy. As Dr. Armstrong says, prior to the epidemic, Sydney was perhaps the worst vaccinated of any civilized country in the world. It is interesting to note that among the persons—one hundred and two in number—who were engaged at the quarantine hospital and at the New South Wales health department in looking after the smallpox patients, one man only, who successfully evaded vaccination, contracted the disease. In summing up the situation, Dr. Armstrong states that "Recent successful vaccination conferred absolute protection against infection during the Sydney epidemic," and that "in a well vaccinated and revaccinated community the disease cannot spread." The conclusions are of interest in view of the number of cases of smallpox which are being reported constantly throughout Canada. In New South Wales also, fresh cases continue to appear.

THE forty-first annual convention of the United States Hay Fever Association takes place at Bethlehem, New Hampshire, on Wednesday the 2nd instant, at 3 p.m. The programme for the public meeting includes informal discussion and personal experiences as to places and remedies. An adjourned meeting for members only will be held on Thursday, the 3rd, when the election of officers will take place. A list of various remedies for hay fever is given in the annual report of the Association. Treatment by active immunization with a pollen vaccine has met with some success and, it appears, gives immunity for one year at least after treatment has been discontinued. In the account of last year's annual meeting, it is stated that nasal operations have proved of no use in the treatment of hay fever.

THE Medical Council of Canada issued its Second Announcement on July 1st. In addition to giving the

requirements for obtaining Dominion registration, this Announcement contains a report of the second annual meeting of the Council, and the questions set at the examinations last autumn are given. The names at present on the register, 161 in number, are also added. There were 71 candidates at the first examinations, of whom 56 were English-speaking and 15 French. The number who passed successfully was 44, being 36 English and 8 French. It is perhaps surprising that so far not more than 85 physicians, exclusive of the members of the Council, have registered under the ten-years clause.

Sir Thomas Roddick tendered his resignation as president of the Council at the meeting. As he humorously put it, "I have lived for Dominion Registration now for more than twenty years and would like to be relieved of the responsibility in connexion with the dear old lady, practically my sweetheart. Now that she has a bank account of her own I think I can desert her without any remorse of conscience." Indeed he has fought valiantly in her service like a gallant knight, and his reward is the gratitude of the profession. Sir Thomas was appointed honorary president and Dr. Thornton succeeds him as president. The next examinations will be held at Montreal on October 13th, 1914, and next year in June at Winnipeg.

ACCORDING to the report of Dr. F. H. Whitelaw, the medical officer of health at Edmonton, typhoid fever was less prevalent during the year 1913 than had been the case in former years. The death rate, however, was extremely high, being 20 per cent. Scarlet fever was endemic throughout the year and the number of cases reported in the city was 206, as compared with 98 during the previous year. Many cases were of a mild type and were not reported, which of course is largely accountable for the prevalence of the disease. During the first six months of the year measles was epidemic, the total number of reported cases

being 961, less than last year when 1,138 cases were reported; the number of deaths from this disease was 29. One hundred and ninety-eight cases of diphtheria were notified. In order that the poorer members of the community may have every protection against this disease, arrangements have been made to supply antitoxin at a low cost, or even free of charge in necessitous cases. Of the twenty persons who contracted smallpox during the year, two only had been vaccinated—one 49 years and one 41 years before. The high death rate from tuberculosis—36·5 per cent.—is largely accounted for by the fact that a great many people already in the later stages of the disease go west hoping to obtain relief through the change of climate.

The housing conditions in Edmonton leave much to be desired, and, as is the case in other places in Canada, the exorbitant rents charged often make it impossible for the honest hard-working citizen to provide suitable and sanitary accommodation for himself and family. It appears somewhat strange that this should be so when one remembers that the city of Edmonton covers an area of 27,236 acres and that the population is estimated at 70,000, whereas Winnipeg with a population of about 185,000 extends over 14,865 acres only. The report of the milk and food inspection is a satisfactory one. The infant mortality rate is given as 171·11 per thousand and it is recommended that a nurse should be appointed to visit mothers and to give advice upon the feeding and care of infants.

IN January last when Mr. Edwin Tate offered the sum of £5,000 to St. Bartholemew's Hospital for this purpose, the nucleus of a fund was laid to enable the London poor to obtain artificial teeth and thus avert much misery and ill-health. Arrangements for the administration of Mr. Tate's gift have now been completed and have been approved by him; it is hoped that further donations will be made to the fund.

Book Reviews

ASTROLOGY IN MEDICINE. THE FITZPATRICK LECTURES DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS ON NOVEMBER 6TH AND 11TH, 1913, WITH ADDENDUM ON SAINTS AND SIGNS. By CHARLES A. MERCIER, M.D. Price \$0.60. Toronto: The Macmillan Company of Canada, Limited, 1914.

The present writer set out to make a review of this book and ended by reading it—it is so interesting in the material which it contains, and in its method of presentation. Upon the subject of astrology has been bestowed more human labour than any other science has ever received. It has been studied by all nations from the time that they emerged from barbarism, and it is not yet quite extinct. The language of astrology is still in daily use—*consider, in opposition, disaster, exorbitant, ascendant, under a lucky star, merchandise, martial, Saturnine, Jovial, Martial, Mercurial, Saturday, Sunday, Monday, lunatic, venereal, Mercury*. Astrology entered into every relation of life, and offered a solution of the most vexed problems. Syphilis was attributed to a peculiar conjunction of the planets by such able physicians as Torella, Basil Valentinus, and Petrus Maynardus. This last was able to predict that the disease would come to an end in the year 1584, a prediction which unhappily has not been verified, although, if he had suggested the year 1914, there would have been in the prophecy much ground for wonder at the element of truth in the doctrine of the transmutation of metals, which professors of the sister science, Alchemy, earnestly taught. Dr. Mercier has written the most cogent account which has ever been given of this strange science, and he has demonstrated how entirely reasonable it was, that is, if one grants the “working hypothesis” which its professors adopted. The word “charming” is the one which best describes this little book. It is a reprint of the Fitzpatrick Lectures which were delivered before the Royal College of Physicians last November, with an additional paper on patron saints and their signs. The book is a demonstration of the continuity of human thought.

SOME AMERICAN MEDICAL BOTANISTS COMMEMORATED IN OUR BOTANICAL NOMENCLATURE. By HOWARD A. KELLY, M.D., LL.D. Price \$3.00. Troy, N.Y.: The Southworth Company, 1914.

The writing of this book was a labour of love, and Dr. Kelly must have had great joy in it. He had an abundance of material to draw from, and he has combined an affection for botany and an affection for botanists. As he says so truly, "No generation could ever discover an affection purer, sweeter, and more refining, and more exhilarating than field botanical excursions, followed by the subsequent pains-taking work of identification." Dr. Kelly reveals the great debt which the science owes to American botanists, the most of whom belong to the medical profession. *Gardenia* was named for Dr. Samuel Garden; *Wistaria* for Dr. Wistar of Germantown; *Claytonia* for Dr. Clayton; *Mitchella* or the Partridge Berry for Dr. Mitchell. Here is a nosegay well worth considering. Dr. Kelly's interest in botany began forty years ago, and since that time he has been in close association with the followers of the craft. After the biographical method he brings before us the noble company of American botanists, from which no one of importance is omitted. But the book is more than a personal tribute. It is an exact history of botany in the United States. The illustrations are beautiful, and the book will prove a precious possession for all lovers of flowers.

LUXOR AS A HEALTH RESORT. By W. E. NICKOLLS DUNN, M.B., M.R.C.S., L.R.C.P., and G. VIGERS WORTHINGTON, M.B., B.C., M.R.C.S., L.R.C.P., superintendent medical officers to the Luxor Hospital for Natives. Price 1s. 6d. net. London: H. K. Lewis, 1914.

Egypt is the place where northern people now go in search of the sun when the winter is sore upon them. Drs. Dunn and Worthington have placed before the profession and the public, who penetrate so far south as Luxor, all the circumstances connected with that health resort. It seems almost incredible that such comfort and luxury as are described in this book could be so readily accessible. The book is a sure guide for physician and patient, and if the directions are followed, it will be the better for him who would take advantage of the brilliant hot sun, and the cool, dry, bracing air of Egypt.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

DEFENSIVE FERMENTS OF THE ANIMAL ORGANISM. By PROFESSOR EMIL ABDERHALDEN. Translated by J. O. GAVRONSKY, L.R.C.P., M.R.C.S., M.D., and W. F. LANCHESTER, M.A. Third enlarged edition; illustrated. London: John Bale Sons, and Danielsson, Ltd., 1914.

RADIUM, ITS PHYSICS AND THERAPEUTICS. By Dawson Turner, B.A., M.D., F.R.C.P., M.R.C.P., F.R.S. Second edition, revised and enlarged. Toronto: The Macmillan Company of Canada, Limited, 1914.

ABDOMINAL SURGERY; CLINICAL LECTURES FOR STUDENTS AND PHYSICIANS. By PROFESSOR THORKILD ROVSING. Edited by PAUL MONROE PILCHER, A.M., M.D. Philadelphia and London: J. B. Lippincott Company, 1914. Canadian agent: Charles Roberts, Montreal.

PRACTICAL PHYSIOLOGICAL CHEMISTRY. By SYDNEY W. COLE, M.A., Third edition. Toronto: The Macmillan Company of Canada, Limited, 1913.

RENAL DIAGNOSIS IN MEDICINE AND SURGERY. BEING A HANDBOOK OF THE THEORY AND PRACTICE OF FUNCTIONAL TESTING OF THE KIDNEY. By DR. VICTOR BLUM, English translation by W. B. CHRISTOPHERSON. London: John Bale, Sons, and Danielsson, Limited, 1914.

PROCEEDINGS OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION AT THE SIXTY-NINTH ANNUAL MEETING HELD IN NIAGARA FALLS, CANADA, June 10-13, 1913. Baltimore: The Lord Baltimore Press, 1913.

- ELEMENTS DE THERAPEUTIQUE OCULAIRE. By DR. A. CANTONNET, Paris. Price 1 fr. 50. Paris: Librairie Maloine, 1914.
- THE PRACTICE OF MEDICINE. By FREDERICK TAYLOR, M.D., F.R.C.P. Tenth edition. Toronto: The Macmillan Company of Canada, Limited, 1914.
- SOME AMERICAN MEDICAL BOTANISTS COMMEMORATED IN OUR BOTANICAL NOMENCLATURE. By HOWARD A. KELLY, M.D., LL.D. Troy, N.Y. The Southworth Company, 1914.
- LUXOR AS A HEALTH RESORT. By W. E. NICKOLLS DUNN, M.B., M.R.C.S., L.R.C.P., and G. VIGERS WORTHINGTON, M.B., B.C., M.R.C.S., L.R.C.P., Superintendent medical officers to the Luxor Hospital for Natives. Price 1s 6d. net. London: H. K. Lewis, 1914.
- A TREATISE ON DISEASES OF THE RECTUM AND ANUS. EDITED BY A. B. COOKE, A.M., M.D., and others. Illustrated. Price \$5.50 net. Philadelphia: F. A. Davis, 1914.
- THE ILEO-CÆCAL VALVE. By A. H. RUTHERFORD, M.D. Price 6s net. London: H. K. Lewis, 1914.
- PRACTICAL HORMONE THERAPY. A MANUAL OF ORGANOTHERAPY FOR GENERAL PRACTITIONERS. By HENRY R. HARROWER, M.D. Price 15s net. London: Baillière, Tindall & Cox, 1914.
- PRACTICAL PÆDIATRICS. A MODERN CLINICAL GUIDE IN THE DISEASES OF INFANTS AND CHILDREN FOR THE FAMILY PHYSICIAN. By JAMES H. MCKEE, M.D., AND WILLIAM H. WELLS, M.D. WITH APPENDIX UPON DEVELOPMENT AND ITS ANOMALITIES BY J. M. TAYLOR, A.M., M.D. Illustrated. Vols 1 and 2. Price \$12.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.
- STAMMERING AND COGNATE DEFECTS OF SPEECH. By C. S. BLEUMEL. Vols. 1 and 2. New York: G. E. Stechert & Company, 1913.
- PATHFINDERS OF PHYSIOLOGY. By J. H. DEMPSTER, A.B., M.D. Detroit, The Detroit Medical Journal Company, 1914.

Men and Books

BY SIR WILLIAM OSLER, BART., M.D., F.R.S.

XXIV. ISRAEL AND MEDICINE.*—In estimating the position of Israel in the human values we must remember that the quest for righteousness is oriental, the quest for knowledge occidental. With the great prophets of the East—Moses, Isaiah, Mahomet—the word was, “Thus saith the Lord”; with the great seers of the West, from Thales and Aristotle to Archimedes and Lucretius, it was “What says Nature?” They illustrate two opposite views of man and his destiny—in the one he is an “*angelus sepultus*” in a muddy vesture of decay; in the other, he is the “young light-hearted master” of the world, in it to know it, and by knowing to conquer. Modern civilization is the outcome of these two great movements of the mind of man, who to-day is ruled in heart and head by Israel and by Greece. From the one he has learned responsibility to a Supreme Being, and the love of his neighbour, in which are embraced both the Law and the Prophets; from the other he has gathered the promise of Eden to have dominion over the earth on which he lives. Not that Israel is all heart, nor Greece all head, for in estimating the human value of the two races, intellect and science are found in Jerusalem and beauty and truth at Athens, but in different proportions.

It is a striking fact that there is no great oriental name in science—not one to be put in the same class with Aristotle, with Hippocrates, or with a score of Grecians. We do not go to the Bible for science, though we may go to Moses for instruction in some of the best methods in hygiene. Nor is the Talmud a fountain-head in which men seek inspiration to-day as in the works of Aristotle. I do not forget the saying:

“In uns'rem Talmud kann man Jedes lesen,
Und Alles ist schon einmal dagewesen.”

With much of intense interest for the physician, and in spite of some brave sayings about the value of science, there is not in it the spirit of Aristotle or of Galen. It is true we find there one of the earliest instances in literature of an accurate diagnosis confirmed

* Remarks made at the dinner commemorating the Twenty-Fifth Anniversary of the Jewish Historical Society, London, April 27, 1914.

post mortem. A sheep of the Rabbi Chabiba had paralysis of the hind legs. Rabbi Jemar diagnosed ischias, or arthritis, but Rabbina who was called in said that the disease was in the spinal marrow. To settle the dispute the sheep was killed, and Rabbina's diagnosis was confirmed.

In the early Middle Ages the Jewish physicians played a role of the first importance as preservers and transmitters of ancient knowledge. With the fall of Rome the broad stream of Greek science in western Europe entered the sud of mediævalism. It filtered through in three streams—one in South Italy, the other in Byzantium, and a third through Islam. At the great school of Salernum in the tenth, eleventh and twelfth centuries, we find important Jewish teachers; Copho II wrote the *Anatomia Porci*, and Rebecca wrote on fevers and the *foetus*. Jews were valued councillors at the court of the great Emperor Frederick. With the Byzantine stream the Jews seem to have had little to do, but the broad, clear stream which ran through Islam is dotted thickly with Hebrew names. In the eastern and western Caliphates and in North Africa were men who to-day are the glory of Israel, and bright stars in the medical firmament. Three of these stand out preëminent. The writings of Isaac Judæus, known in the Middle Ages as *Monarcha Medicorum*, were prized for more than four centuries. He had a Hippocratic belief in the powers of nature and in the superiority of prevention to cure. He was an optimist and held strongly to the Talmudic precept that the physician who takes nothing is worth nothing. Rabbi ben Ezra was a universal genius and wanderer, whose travels brought him as far as England. His philosophy of life Browning has depicted in the well-known poem, whose beauty of diction and clarity of thought atone for countless muddy folios. But the prince among Jewish physicians, whose fame as such has been overshadowed by his reputation as a Talmudist and philosopher, is the Doctor Perplexorum,—dux, director, demonstrator, neutrorum dubitantium et errantium!—Moses Maimonides. Cordova boasts of three of the greatest names in the history of Arabian medicine; Avenzoar, Albucasis, and Averroes (Avenzoar is indeed claimed to be a Jew). Great as is the fame of Averroes as the commentator and transmitter of Aristotle to scholastic Europe, his fame is enhanced as the teacher and inspirer of Moses ben Maimon. Exiled from Spain, this great teacher became in Egypt the Thomas Aquinas of Jewry, the conciliator of the Bible and the Talmud with the philosophy of Aristotle. He remains one of Israel's

great prophets, and while devoted to theology and philosophy, he was a distinguished and successful practitioner of medicine and the author of many works highly prized for nearly five centuries, some of which are still reprinted. He says pathetically, "Although from my youth Thorah was betrothed to me and continues to live by me as the wife of my youth, in whose love I find a constant delight, strange women, whom I took at first into my house as her hand-maids, have become her rivals and absorbed part of my time." The spirit of the man is manifest in his famous prayer, one of the precious documents of our profession, worthy to be placed beside the Hippocratic oath. It ends with: "In suffering let me always see only my fellow creature."*

In the revival of learning in the thirteenth century, which led to the foundation of so many of the universities, Hebrew physicians took a prominent part, particularly in the great schools of Montpellier and of Paris, and for the next two or three centuries in Italy, in France, and in Germany, Hebrew physicians were greatly prized. But too often the tribulations of Israel were their lot. As one reads of the grievous persecutions they suffered, there comes to mind the truth of Zunz' words: "*Wenn es eine Stufenleiter von Leiden giebt, so hat Israel die höchste Staffel erstiegen.*" Their chequered career is well illustrated by the relations with the Popes, some of whom uttered official bulls and fulminations against them, others seem to have had a special fondness for them as body physicians. Paul III was for years in charge of Jacob Montino, a distinguished Jewish physician, who translated extensively from the Arabic and Hebrew into Latin, and his edition of Averroes is dedicated to Pope Leo X. In my library there is a copy of the letter of Pope Gregory XIII, dated March 30th, 1581, and printed in 1584, confirming the decrees of Paul IV and Pius V, which he regrets were by no means held in observance, "but that there are still many among Christian persons who desiring the infirmities of their bodies to be cured by illicit means, and especially by the service of Jews and other infidels. . . ." It was at Mantua that a Jewish physician, Abraham Conath, established a printing press, from which the first Hebrew works were issued. Throughout the sixteenth, seventeenth, and eighteenth centuries in France, Germany, and Italy we meet many distinguished names in the profession, and in his *Geschichte der Jüdischen Aertz* Landau pays a very just tribute to their work. Only a few are met with in Eng-

*I am told by authorities that the attribution of this prayer to Maimonides is doubtful. Where is the original? W.O.

land. Isaac Abendana, a Spaniard, practised in Oxford and lectured on Hebrew at Magdalen College. We have at the Bodleian Jewish almanacs which he issued at the end of the seventeenth century, and a great Latin translation of the Mishna. He afterwards migrated to Cambridge. A more important author was Jacob de Castro Sarmento, a Portuguese Jew, who became licentiate of the Royal College of Physicians in 1725, and Fellow of the Royal Society in 1730. There is in the Bodleian an interesting broadsheet from the Register of the London Synagogues respecting charges made when his name was proposed at the Royal Society. He contributed many papers to the Philosophical Transactions, and was the author of several works. In the eighteenth century Jean Baptiste de Silva, of a Portuguese Jewish family, became one of the leading physicians of Paris, consulting physician to Louis XV, and the friend of Voltaire, who remarks "*C'était un de ces médecins que Molière n'eut ni pu ni osé rendre ridicules.*" One of the special treasures of my library is a volume of the *Henriade* superbly bound by Padeloup, and a presentation copy from Voltaire to de Silva, given me when I left Baltimore by my messmates in "The Ship of Fools."* Voltaire's inscription reads as follows:

"A Monsieur Silva, Esculape François. Recevez cet hommage de votre frère en Apollon. Ce Dieu vous a laissé son plus bel héritage, tous les Dons de l'esprit, tous ceux de la raison, et je n'eus que des Vers, hélas, pour mon partage."

In the nineteenth century, with the removal of the vexatious restrictions the Jew had a chance of reaching his full development, and he has taken a position in the medical profession comparable to that occupied in the palmy Arabian days at Cordova and Bagdad. In Germany particularly, the last half of the century witnessed a remarkable outburst of scientific activity. Traube, who may well be called the father of experimental pathology, Henle, the distinguished anatomist and pathologist, Valentin, the physiologist, Lebert, Remak, Romberg, Ebstein, Hensch, have been among the clinical physicians of the very first rank. Cohnheim was the most brilliant pathologist of his day; to Weigert pathological histology owes an enormous debt, and, to crown all, the man whose ideas have revolutionized modern pathology, Paul Ehrlich, is a Jew. In America Hebrew members of our profession for many years occupied a very prominent position. The father of the profession today, a man universally beloved, is Abraham Jacobi, full of years and

* A dining club.

honours; and the two most brilliant representatives in physiology and pathology, Simon Flexner and Jacques Loeb, carry out the splendid traditions of Traube and Henle. I have always had a warm affection for my Jewish students, and it has been one of the special pleasures of my life the friendships I have made with them. Their success has always been a great gratification, as it has been the just reward of earnestness and tenacity of purpose and devotion to high ideals in science; and, I may add, a dedication of themselves as practitioners to everything that could promote the welfare of their patients. In the medical profession the Jews had a long and honourable record, and among no people is all that is best in our science and art more warmly appreciated; none in the community take more to heart the admonition of the son of Sirach, —“Give place to the physician, let him not go from thee, for thou hast need of him.”

MEDICAL HEALTH OFFICERS OF BRITISH COLUMBIA

THE first annual convention of the medical health officers of British Columbia took place at Vancouver on Wednesday and Thursday, July 17th and 18th, about thirty medical officers being in attendance. At the first session Dr. F. T. Underhill, medical officer of health of Vancouver, was in the chair. A paper was read by Dr. J. J. Thompson, of North Vancouver, on the responsibility of public authorities and the general controversy concerning tuberculosis. Dr. Thompson insisted upon the importance of early notification of the disease among all classes and the necessity of dealing with its problems in a business like way. Papers were read by Dr. G. A. B. Hall, of Victoria, and Dr. W. C. Hepworth, of Steveston. Dr. Hall chose as the subject of his address epidemic infantile paralysis. He cited instances to indicate the contagious nature of this disease and was of the opinion that the subsequent paralysis could be prevented in many cases if the disease were recognized early enough and if the patient were given absolute quiet. Dr. Hepworth referred to some of the difficulties met with in public health work; he thought that the provincial government should constrain rural municipalities to protect public health and he recommended the erection of emergency isolation hospitals in small communities.

At the afternoon session, Dr. A. L. McQuarrie, of New West-

minster, presided. Papers were read by Dr. J. E. Crichton, of Seattle, Dr. F. T. Underhill, who referred to the need for improved legislation concerning buildings, plumbing, and so forth, by Professor W. T. McDonald, of Victoria, and by Mr. A. G. Dalzell, assistant city engineer of Vancouver, who spoke on the disposal of sewage.

Dr. E. C. Arthur, of Nelson, presided over the first session on Thursday, when an address was given by Dr. H. Dyer, of Vancouver, on the checking of infectious diseases. Dr. Dyer suggested that by checking too carefully the spread of minor infectious diseases among children the race might suffer through the lack of a naturally acquired immunity to such affections. Dr. T. V. Hunter, of South Vancouver, chose as his subject medical inspection from the standpoint of parents, teacher, and physician, and Dr. McQuarrie addressed the members on milk-borne scarlet fever, referring to the epidemic in New Westminster last year when the infection was traced directly to the milk supply. On Thursday afternoon Dr. F. F. Wesbrook, president of the University of British Columbia, gave an address on the necessity for greater coöperation among coördinate professions, especially concerning matters of public health. The members then paid a visit to the Colony farm at Essondale where they inspected with much interest the model dairy.

A resolution was passed in appreciation of the work of the provincial department of agriculture in its efforts to eradicate tuberculosis in cattle, suggesting that a permanent health committee should be appointed to consider matters of moment to public health, and that the health committee should comprise the secretary of the provincial board of health and the medical health officers of Vancouver and Victoria, with power to add to their number. It was further resolved unanimously that the most satisfactory course for the government to adopt in reference to tuberculosis would be to provide financial assistance towards efficient measures for the prevention, care, and treatment of such cases, and it was recommended that more thorough examination of immigrants should be instituted and that measures should be taken to prevent the spread of disease amongst Indians.

THE fourth graduation exercises of the training school for nurses at the Hamilton Hospital for the Insane took place on June 17th. On this occasion six candidates received diplomas.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

SOFT AND HARD CHANCRE; A THERAPEUTIC OBSERVATION. BY
HUGO MULLER OF MAINZ. *Muenchener Medizinische
Wochenschrift*, No. 23, 1914.

THE question of treatment of typical primary syphilitic lesions need not be entered upon here. But what stand does the physician take with respect to the treatment when the question arises regarding the differential diagnosis of hard and soft chancre? Scientifically speaking, the question of diagnosis has been settled by the recognition of the organism causing the hard and soft sore: the spirochæta pallida and Ducrey's bacillus respectively. Of course we recognize at times a mixed infection. In the days prior to the discovery of these organisms was it sufficient to make a diagnosis on the clinical aspect of the sore? No, for Finger lays great stress on the fact that lesions that are anatomically typical soft sores and show nothing unusual in their course may be followed by general lues. The following cases which occurred in the pre-Schaudin period are good examples of this fact.

CASE 1. Musician. Soft sore, soon healed, followed by tabes.

CASE 2. Baker. Soft sore, bubo: lues and infection of his wife.

CASE 3. Cattle dealer. Soft sore, bubo; after ten years leukoplakia; Wassermann positive.

CASE 4. Officer. Typical soft chancre; patient under observation by specialists for a year but no symptoms; paralysis.

When we have made a diagnosis of soft chancre we institute a search to find Ducrey's bacillus and exclude the spirochæta pallida. If the latter is not found the sore is treated with pure carbolic acid and usually heals over in a few days. If the pallida is nevertheless present, an induration will usually appear at the site of the healed sore in one or two weeks, and to fail to interpret this sign correctly is indeed an error as many a patient knows to his cost. If spirochætes cannot be found in a sore, gland-puncture should be practised. The question is raised whether one should not withhold the carbolic acid treatment and allow the ulcer to

follow a more physiological course in order to make a more certain diagnosis. Another course is to confine ourselves to the Wassermann reaction. That this reaction is usually tried on the cases in our clinic shows the inadequacy of ordinary clinical diagnostic methods. But there is no comparison between the results of treatment with salvarsan in the case of a positive Wassermann and those obtained by the abortive method in the early stages while the reaction is still negative. The only way to avoid such a situation as the appearance of a syphilitic rash following a typical soft chancre is by the procedure advised by Neisser; salvarsan therapy administered at once in all doubtful cases. Some years ago many medical men were in the habit of giving prolonged mercurial treatment in these doubtful cases, and it was impossible to tell if the patient had not undergone much inconvenience without cause. Nowadays two or three injections of salvarsan given at once can ensure the patient's welfare. Neisser's proposition may not seem exactly scientific but it is eminently practical; for, if in a case of suspected pulmonary tuberculosis we are not guided by the absence of tubercle bacilli, but institute treatment at once why should we not do the same in syphilis? Another question we must consider is this: is it possible for a case of undoubted primary syphilis with the presence of spirochætes not to be followed by general syphilis, if untreated? Jadassohn emphasizes the theoretical possibility of isolated spirochætes entering the general circulation without causing general lues. This would explain the exceptional cases where, after excision of the primary sore, the inherent immunity of the patient deals successfully with the few organisms in the system. We might take a still further step and state that in the case of a non-excised primary lesion a large number of spirochætes, remaining localized, may ensure such a production of antibodies as to ward off a general infection. In fact it has been argued on these grounds that excision of the chancre is not good practice. An interesting case is that of a workman who presented himself at the clinic with a typical syphilitic chancre; spirochætes present; Wassermann positive; slight adenitis but no rash. Patient was referred to another department for treatment but by some misunderstanding received none. After two months he reported and his condition was as follows: no adenitis; no general symptoms; no history of a rash; primary lesion disappeared; Wassermann negative. The experience of many observers in Mainz is that the ulcer of the typical soft chancre type is infrequent, but still more infrequent is the absence of an accompanying syphilitic infection. It would naturally be a

mistake for a doctor to treat prophylactically with salvarsan every lesion found on the genitals, for this might bring the accusation of quackery and self-interest upon him, but the most careful judgment must be observed. The situation is best summed up in Neisser's own words: We can now, however (i.e. since the introduction of the Wassermann reaction and salvarsan therapy) go a step further and in a case of suspected syphilis, even without a positive diagnosis, begin the treatment at once; at any rate in urgent cases such as engaged or married couples. Then, if it is indeed syphilis, the chance of immediate arrest of the disease is naturally great.

EXPERIENCES WITH THE F. F. FRIEDMANN REMEDY IN TREATMENT OF SURGICAL TUBERCULOSIS. FROM A DISCUSSION AT A MEETING OF THE BERLIN MEDICAL SOCIETY OF MAY 27TH, 1914.

Herr J. Israel: "As already pointed out, no definite results have been observed, although in one case the discharge from a fistula ceased. Tuberculosis of the testis and epididymus remained uninfluenced. In one case of tuberculosis of the kidney where the Friedmann treatment was employed the organ had to be removed and showed fresh miliary lesions. Friedmann had told the patient that she had been specifically treated and that an operation was absolutely contraindicated. The patient recovered completely after the operation."

Herr Wolff-Eisner: "Friedmann has not kept faith with regard to giving information regarding his culture. He merely observes that it is different to the old; that it is absolutely harmless to warm-blooded animals and that it lends the highest grade of immunity. These observations are inconclusive. In May, 1913, the American government issued an official notification to the effect that it did not approve of the Friedmann treatment." Wolff Eisner has himself seen a great number of cases which had been declared cured by the Friedmann method and had remarked the following: none of them had been cases of active tuberculosis; no material improvement was noted; some of the cases had been falsely diagnosed, such as *ulcus cruris* in the case of a conductor which had been cured by the rest in bed, and a case of *psoriasis*. In fact there is no proof of the efficacy of the remedy.

London, Ontario.

G. C. HALE

Res Judicatæ

GIANTS AND DWARFS

ONCE upon a time the giant was superman. Respectable cities had one for a protector, a founder, or an overthrown tyrant. Now though he may live, precariously, as a freak in a dime show, his chief function is to die, having made proper provision for the preservation of his earthly remains in some medical museum, where, carefully placed in the section reserved for "Ductless glands; Pituitary; Hyperfunction, Effects of;" (he has been labelled by scientists a victim of hyperpituitarism), he provides for many decades a centre of attraction to, and a source of envy for visitors from less fortunate medical schools.

It happens that it is not proven that all giants are victims of hyperpituitarism. Many certainly, or almost certainly, are not: it is quite possible none are; but the phrase is attractive and is worming its way into medical speech and writing. This being so, it is quite obvious that if hyperpituitarism produces giants, hypopituitarism should, in a reasonably ordered universe, produce dwarfs. This obvious association has found favour and of course dwarfs ought, in any well-arranged museum, to be placed beside giants, labelled, "Pituitary; Hypofunction, Effects of." Into this perfectly simple and happy world a bomb* has been dropped. Soaring in an aeroplane of happy inspiration and plausible hypothesis, Dr. Murk Jansen has seen this quiet backwater of medical museums and—crash!—the backwater is no longer quiet. Without a breath of apology to overworked and underpaid curators, he breaks up the peaceful and pretty association and says that the dwarfs have got to move. Their place is altogether different and its label is "Fœtal membranes; Amnion, hyperplasia, Results of," or else "Fœtal membranes; Amnion, hydramnios, Effects of."

It is sad that the giants and the dwarfs should be separated in

Achondroplasia, Its Nature and its Cause. A study of the Stunting of Growth in Embryonic Cell Groups caused by Amnion Pressure in the different stages of development of the skeleton (Anencephaly, Achondroplasia, Kakomelia). By Dr. Murk Jansen, lecturer on orthopædic surgery, University of Leiden. London: Baillière, Tindall and Cox, 1912.

this summary fashion, but perhaps the giants will not be sorry, for, as the elephant dreads the mouse, so does your giant loathe and fear a dwarf. This once had an amusing illustration. An empress of Austria, desiring to have a great pageant, summoned to Vienna all the giants and all the dwarfs to be found within the confines of the empire. On arrival the big men and the little were housed in the two wings of a disused barracks. Popular fears were loudly expressed that the giants would terrify, perhaps even maltreat, the dwarfs. The result was different. The giants after one day of being bullied and insulted by the dwarfs, refused to stand it any longer. They went on strike, pageant or no pageant they were going home. To effect a settlement the authorities had to undertake to post a military guard, day and night, to protect the giants from their diminutive tormentors. There is truth in the scathing proverb, "Long and lazy; little and loud." So, perhaps (who knows?) the corner of the museum labelled "Ductless glands; Pituitary, etc." so quiet by day is not so quiet i' the glimpses o' the moon.

Leaving the giants alone in their glory and in their now truly quiet corner, let us follow Dr. Jansen as he removes our precious dwarfs to the case reserved for the amnion and its misdeeds. Positively we shall have to enlarge that case! Here is a selection from the conditions our guide is preparing to put in it: Anencephaly; spina bifida; achondroplasia; hemi-ectromelia; oligodactyly; kako-melia; hare lip; micrognathy; agnathy; hydrocephalus; myx-œdema; gas bubbles; subcutaneous fatty masses; excessive sexual appetite (typified, we suppose, by a statue of Bes, of whom more anon) and, horrors! hypopituitarism. (Poor old giant, just when we had made your little enemy say a fairly polite good-bye to you, too!) It is all very brilliant and very interesting and—unconvincing. Gentle reader, the Bes referred to above is not she of the spacious days, but he of Egypt, thrice worshipped deity whose votaries, unconscious of their true protector and overlord, are ever with us. Bad old Bes, lord of the brothels, is an achondroplastic dwarf. He symbolizes the bestial. and all, says Dr. Jansen, because his amnion was too tight during the fourth or fifth week of uterine life. Others may have the same excuse. Let us be charitable and blame not them but the condition of their amnion eight months before they were born. Those who wish to know what Bes is like to gaze upon will find his photograph displayed as frontispiece in Dr. Jansen's book.

To business. The hypothesis put forward by Dr. Jansen is

strikingly original. There is nothing vague about it. It boldly announces, as has been already indicated, that achondroplasia is the result of an excess of pressure exerted by the amnion on the young and plastic embryo, and it skilfully marshals a complicated and often apparently contradictory mass of facts into a consistent and far-reaching generalization. Frankly, we are far from convinced that Dr. Jansen is right, but that is of minor importance. It is neither the rightness nor wrongness of an hypothesis that matters, but whether it presents a new point of view or provides some illuminating suggestion capable of serving as the nucleus of a new series of original investigations. If it does that, it is a good hypothesis and if Dr. Jansen's bombshell can stimulate opposition intent on proving him wrong, the end of science will be served. We believe it will stimulate opposition, for medical thought has been passing through a phase in which some hypothetical disturbance of some hypothetical internal secretion was supposed to be sufficient explanation of some real growth disturbance, and here is Dr. Jansen boldly proclaiming that a mechanical cause is the thing. Good! It may or may not be, but this forceful suggestion will serve to remind all workers that chemistry is not everything, that physics and anatomy are not less important.

We believe Dr. Jansen's hypothesis is wrong for all its brilliance because he has overlooked the important fact that the physiological response of any one tissue to any given physiological stimulus is not necessarily the same in all parts of the body. In other words, taking cartilage as an example, it is not correct to assume that cartilage is just cartilage, for there is one cartilage of the vertebral column and another of the sternum; one cartilage of the femur and another of the foot; and still others in other parts of the body; all similar in appearance but all different in their response to the growth stimuli which reach them. It is this different endowment of different samples of one tissue that underlies many of the puzzling irregularities of growth. Amnion pressure may be, is, a real factor in limiting embryonic growth. No one doubts that. Dr. Jansen promotes it to the rank of a serious rival to intestinal stasis. We look forward to hearing shortly from its first apostle that intestinal stasis produces amnionic hypoplasia and hydramnios (why not?) and therefore amnion pressure; and, from the apostle of the other faith, that amnios pressure causes intestinal stasis. Then the circle will be complete and the field of pathology covered. There will then be no need for medical treatment and but two surgical operations, short-circuiting the gut and pricking the bubble—the amnion.

But, in spite of his overwhelming exuberance, Dr. Jansen is to be congratulated upon his strength in drawing himself out of the fashionable rut of the day. He has got hold of something important and has performed a real and striking service to anatomy, pathology, and orthopædics, and we believe that as the years go on his book will be recognized as one of the foundations of a reconstructed edifice of medical thought. From this point of view it is important, and, in addition, it appeals to humanity's undying interest in giants, dwarfs, and—Bes.

Obituary

DR. W. L. GABOURY, who had been practising at Pembroke, Ontario, was driving home after visiting a patient when, in crossing the railway track, the buggy in which he and another gentleman were seated was struck by a train and both were instantly killed. Dr. W. L. Gaboury was the son of Dr. Gaboury of Plantagenet, Ontario; he graduated from Queen's University in 1912.

DR. HENRY G. FARISH, of Liverpool, Nova Scotia, died on Tuesday, June 30th, in the eighty-ninth year of his age. Dr. Farish was the son of Dr. Henry Greggs Farish and was born in Yarmouth in 1825. He resided in Liverpool for sixty-four years and continued to practise his profession there until a few years ago. He leaves three sons, two of whom are members of the medical profession, and one daughter.

DR. ALBERT ROBERTS PYNE, of Toronto, died July 6th, in the sixty-fifth year of his age. Born in Waterford, Ireland, he came to Canada as an infant and was educated at the Newmarket Grammar School. After commencing the study of medicine, Dr. Pyne took up teaching for a time, and finally graduated from the University of Toronto in 1887. Dr. Pyne was the son of Dr. Thomas Pyne and the elder brother of the Honourable R. A. Pyne, minister of education for the province of Ontario. Dr. Pyne leaves a widow and one daughter.

DR. LESTER ROBIN FISLEY died at Calgary June 30th. Dr. Fisley had been ill for some months. His parents reside in Toronto.

DR. W. M. KEYES, of Georgeville, Quebec, died June 29th. Dr. Keyes was a well-known practitioner in Georgeville, where he had lived for many years.

DR. CHARLES ALFRED COLEMAN died at Epsom, England, July 6th. Dr. Coleman was born in Halifax, Nova Scotia, and was in the sixty-sixth year of his age. He had been living in England for the past thirty years and until recently had been practising at Streatham.

DR. JAMES BRUCE COLERIDGE, of Ingersoll, Ontario, died at Woodstock on July 8th. Dr. Coleridge was born in Ingersoll in 1878. After attending the Central School and Collegiate Institute at Ingersoll, Dr. Coleridge entered the University of Toronto and graduated silver medalist in 1901. He was in partnership with Dr. Williams until a few years ago, when he went into practice for himself. Dr. Coleridge was a respected and prominent physician, popular alike with his patients and with members of the profession, and his untimely death is much regretted. Apart from his professional work, the future held promise of a brilliant parliamentary career. In municipal affairs Dr. Coleridge had already occupied the position of alderman in 1905 and 1906, and mayor in 1907 and again in 1912 and 1913. He leaves a widow and one child.

DR. M. J. GLASS, of Poplar Hill, near Strathroy, Ontario, died July 5th in the sixty-sixth year of his age. Dr. Glass had practised in the village of Poplar Hill for twenty-five years and was well known.

DR. ARTHUR W. GROVER, of Dresden, Ontario, died June 28th. Dr. Grover was the son of Mr. A. L. Grover of Toronto; owing to ill health he had been unable to practise for some time.

DR. FRED. PARKER, of Stratford, Ontario, died suddenly July 11th. Dr. Parker, who was fifty years of age, fell dead in his automobile while watching a game of baseball. He was born in Ellice township in the county of Perth. He practised at Sault Ste. Marie before going to Stratford.

DR. ARTHUR VAILLANCOURT, of Waterloo, Que., died July 2nd, in the thirty-ninth year of his age. Dr. Vaillancourt was born at Saint Sylvestre, in the county of Lotbinière, July 4th, 1875. He received his medical training at Laval University, Quebec, and

since 1903 has been practising at Waterloo. Dr. Vaillancourt leaves a widow and three sons.

DR. GEORGE J. GLADMAN, of New York, died July 16th at the age of fifty. Dr. Gladman was born in Lindsay, Ontario. He graduated in medicine from McGill University in 1886.

News

MARITIME PROVINCES

THE Provincial Sanatorium at Kentville, Nova Scotia, was established in 1904 by the government for the purpose of giving those having early pulmonary tuberculosis a chance to recover their health. A weekly fee of five dollars is charged, which must be paid in advance, and in addition a small charge is made for laundry, etc. The balance required to maintain the sanatorium is received from the provincial government. The ninth annual report of the medical superintendent, Dr. A. F. Miller, states that during the year ending September 30th, 1913, 64 applications for admission were made and that of these 38 were accepted. At discharge 23 of these cases were apparently cured, 11 were arrested, and 2 were improved, 2 only failing to respond to treatment. In November, 1912, the building of two pavilions was commenced and they were completed in June, 1913; they each have accommodation for 16 patients. In considering the results of treatment, it is stated that when tuberculin is given, patients do better while in the sanatorium, but that ultimately little benefit is apparent. Efforts to determine the activity or non-activity of pulmonary tuberculosis have been made but no definite result has been obtained as yet. Accurate records of all patients have been kept since January, 1910. Since that time 94 patients have received treatment; 59 of these are now well and working, 19 are not working, 15 are dead, and the condition of one is unknown. There is great need in the province for free hospitals, to which needy patients may go for treatment. The purpose of the sanatorium at Kentville is to diagnose and treat early cases of pulmonary tuberculosis, and the management is ready at all times, says the report, to instruct physicians in the

diagnosis of tuberculosis, but, unfortunately, little advantage is taken of this feature of the work.

ONTARIO

THE following is the list of candidates who have successfully passed the examinations of the College of Physicians and Surgeons of Ontario:

George Chambers Anglin, Toronto; James Priestly Austin, Windsor; Charles Clarke Ballantyne, Toronto; Albert Frederick Bastedo, Bracebridge; John Reginald Beaven, Hespeler; William Ker Bell, Meaford; James Ernest Bond, Toronto; John Murray Bremner, Camilla; Charles Hulse Brereton, Toronto; Harold Ernest Brown, Peterboro'; Howard Hampden Burnham, Toronto; George Leonard Caldwell, Shanty Bay; Keith Wilson Cameron, Toronto; William Arthur Cardwell, Toronto; John Harold Cascaden, Toronto; Michael Joseph Casserly, Hamilton; Harold Clarke, Toronto; Frank Robert Clegg, London; Ernest James Clifford, Toronto; Hartly Robert Conn, Thornbury; Harold Edward Connelly, Ottawa; Lorne Hall Cook, Toronto; Albert Joseph Couillard, Ottawa; Richard Edwin Crane, Toronto; Oswald John Day, Orillia; Herbert Knutsen Detweiler, Berlin; Harry Dingle, Greenbank, Sidmoult, Devon, Eng.; Hamnett Townley Douglas, Montreal, Que.; Harry Dover, Ottawa; Francis Louis Eberhart, Seaforth; Percival Elmore Faed, Woodville; George Murray Flock, Burlington; Gordon Sutcliffe Foulds, Toronto; William Lawrence Gaboury, Lefavre; William John Gardiner, Mount Forest; Geo. Clarence Gliddon, Union; Malcolm David Graham, Arnprior; Benjamin Leslie Guyatt, Binbrook; William Hamilton, Toronto; Beverley Hannah, Toronto; Russell E. Hartry, Seaforth; Ivan Dwight Hayes, Toronto; Harold Heffering, Toronto; Earl Darius Hubbell, Thamesville; John Joseph Hurley, Toronto; Howard Brown Jeffs, Toronto; Samuel Orville Hughes Jones, London; Charles Otto Earle Kister, Chippewa; James Edward Knox, Toronto; Jean Marie Laframboise, St. Eugene; Arthur Elgin Lidstone, Kingston; William Thomas Little, Owen Sound; Horace Roy Macintyre, Kincardine; Charles Clifford Macklin, Milliken; Harold Sanderson Martin, Hamilton; John Cotton Maynard, Stratford; Charles Richard Llewellyn Morgan, Hamilton; Duncan Arnold Morrison, Maxville; Patrick Gannon Mulloy, Inkerman; Alexander Muterer, Ingersoll; Vincent Arthur McDonough, Nashville; Hugh Alexander McKay, Toronto; Kenneth

George McKenzie, Monkton; Walter Wake McKenzie, Toronto; Alan Ernest McKibbin, Chelsea, Que.; William John McLean, Belgrave; Laurel Cole Palmer, Toronto; Murray Hulme Paterson, Chatham; Leslie Gladstone Pearce, Brantford; Robin Pearse, Toronto; John Wilmer Peck, Seaforth; Orlando William Pickard, Sandwich; John Melancthon Pollock, Berwick; Douglas Absolom Quick, Harrow; Lee Anderson Richmond, London; Ernest Fulton Risdon, Toronto; Frank Ramsay Scott, Toronto; James Douglas Shields, Mount Albert; Richard James Shute, Holland Centre; William Ewing Sinclair, Meaford; Robert Franklin Slater, St. Mary's; Morley Thomas Smith, Greenbush; Roy Stanley Smith, Hamilton; Damien St. Pierre, Moose Creek; Robert Gordon Struthers, Galt; Addison Taylor, Lynedoch; James Grant Turnbull, Sarnia; Thomas Geddes Wilson, Wingham; Charles Stuart Wynne, Toronto.

Two thousand five hundred claims have been made in connexion with the late typhoid epidemics at Ottawa. Of these six hundred and eighty-one, representing an amount of \$34,859 have been passed for payment and further information is being collected concerning the remainder.

THIRTY-TWO cases of smallpox were reported in the Province during the month of June. This is a distinct improvement upon last year, when sixty-two cases were reported during the same month.

At a recent meeting of the Woodstock board of health a committee was appointed to enquire into the question of plumbing inspection and to draft new by-laws for submission to the board of health. The members of the committee are Dr. S. G. McKay, Dr. John A. McKenzie, and Dr. Ruttan.

AN outbreak of typhoid fever is reported from Sault Ste. Marie and Steelton. Most of the cases are of a mild type.

A NUMBER of cases of smallpox have been reported at Mileage, near Cobalt.

DR. S. J. STREIGHT, who has been in practice at Welland during the past three years, sailed on June 30th for a year's post-graduate work in the hospitals of London and Vienna.

DR. H. W. HILL, director of the London Institute of Public Health, has been granted a year's leave of absence. Dr. Hill is to spend some time in Minnesota, where he will direct the establishment of an institute similar to that at London.

ON June 30th, the number of cases of diphtheria in Ottawa was reported as forty-seven. A good many of these cases apparently originated in the day nursery.

THE new operating room at the Belleville Hospital was opened June 25th.

QUEBEC

THE new St. Justine Hospital for Children, which has just been completed at Montreal, was opened June 22nd. The hospital contains eighty beds. It has three public wards and one private ward, and a dispensary. In the outdoor department a course of lectures, which are free to the public, will be given on the care of infants and the treatment of simple ailments. Training classes for nurses have also been commenced.

AN industrial home for the adult blind is in course of erection on the grounds of the school for the blind which was opened at Notre Dame de Grace, Montreal, about eighteen months ago. The school was built by the Montreal Association for the Blind and contains accommodation for forty pupils; it is non-sectarian and instruction is given in piano tuning, typewriting, machine knitting, sewing, and in the piano, organ and violin.

IT is probable that a hospital will be built at Maisonneuve, Montreal, by the Union Nationale Française. It is the intention to establish the proposed hospital on the lines of the French hospitals at London, New York, and San Francisco. The matter is still under consideration.

THE report of the Bruchesi Institute at Montreal for the year 1913-1914 states that 3,285 patients attended the clinics held during the year; the total number of consultations was 14,042; and the number of deaths from tuberculosis registered in Montreal during the year was 1,083. The report suggests that a permanent commission, consisting of three members, be appointed by the pro-

vincial government to direct all work done in the prevention of tuberculosis in the province of Quebec.

THE Montreal branch of the Victorian Order of Nurses gave attention to 12,942 patients during the year 1913. This necessitated no less than 128,546 visits, of which 5,757 were night calls. The operations numbered 496, the medical cases 2,980, the surgical cases 759, the gynæcological 503, the obstetrical 4,207, and the deaths 225. The number of infants born was 4,174. In addition to the actual nursing, nurses have been provided for five milk stations where they can give practical advice to mothers on the care and feeding of their infants. A scheme for social service has been inaugurated at the Royal Victoria and General Hospitals and a nurse of the Victorian Order now endeavours to follow up cases that have been discharged and that may still require attention.

ALBERTA

THE autumn examinations for those wishing to obtain license to practise in Alberta will begin on September 15th, and will be held at the University of Alberta, Edmonton South, Alta. Applications, with examination fee of \$50, matriculation certificate, and graduation diploma must be in the hands of the Registrar, University of Alberta, on or before August 15th. Proper application blanks and further information may be obtained upon request.

THE following cases of communicable disease were reported in Edmonton during the month of June: smallpox, 6; diphtheria, 6; scarlet fever, 18; measles, 18; German measles, 5; chicken-pox, 5; mumps, 26; erysipelas, 1; whooping cough, 28; No cases of typhoid fever were reported. Two hundred and thirty births and forty-two deaths were registered.

SASKATCHEWAN

AN addition is being made to the Provincial Hospital for the Insane, at Battleford.

ONE hundred and one cases of measles were reported in Moose Jaw during the first three weeks of June. The disease had been prevalent for some weeks but there have been few fresh cases since June.

According to the regulations of the provincial legislation, paper drinking cups must be kept on sale at not more than one cent each on all passenger trains. Individual towels must also be provided in all public places.

BRITISH COLUMBIA

AN Act has been passed by the legislature whereby the Act of Incorporation of the Provincial Jubilee Hospital at Victoria has been changed to admit as members of the board three medical men. In accordance with this change, Drs. Leeder, Rogers and Wasson have been appointed to the board by the Medical Council of British Columbia. It is now twenty-four years since the hospital was opened and during that time the accommodation has been increased from fifty to ninety-two beds, and the number of patients admitted has grown from three hundred and thirty-one during the first year to one thousand, four hundred and five during 1913. The average daily cost of maintenance is now \$2.10 for each patient.

THE report on the medical inspection of schools in Victoria during the year 1913 states that over 50 per cent. of the 4,147 children examined had never been vaccinated. The examination disclosed 249 cases of malnutrition, 116 cases of adenoids, 488 cases of enlarged tonsils, 406 cases of enlarged cervical glands, 59 cases of goitre, 28 of ringworm, 23 of scabies, 2 of hare-lip, 3 of cleft palate, one of tuberculosis of the spine, and one of paralysis. A number of cases of defective vision, hearing, and teeth, whooping cough and chicken-pox were discovered, and the report calls attention to the number of defective and backward children in the schools, their bad influence upon the other children, and the need for special classes for such children.

A NEW wing is to be added to the Chilliwack Hospital at an estimated cost of six thousand dollars.

DR. MCINTOSH and Dr. Pearson recently addressed the Grandview Ratepayers' Association at Vancouver upon the advantages which would accrue to the city were a health commission appointed. A resolution was passed unanimously by the ratepayers recommending that the charter of the city should be so amended that a health commission could be appointed each year, the commission to be composed of the mayor, three members of the medical profession, and

three laymen. The matter has been taken up already by the Vancouver Medical Association, but as yet no definite action has been taken by the city council.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Dominion Medical Monthly, July, 1914:

- "The Ballad of the Services," and
Allied Studies J. S. Sprague.

The Canadian Practitioner and Review, June, 1914:

- The duties of the medical officer of
health J. W. S. McCullough.
Motor conjunctivitis G. Sterling Ryerson.

The Canadian Journal of Medicine and Surgery, July, 1914:

- Surgical limitations in diabetes H. A. Bruce.
Symptoms of uremia and their inter-
pretation H. B. Anderson.
The experimental study of diabetes J. B. Leathes.
Spasmodic torticollis - C. Sheard.

The Public Health Journal, June, 1914:

- The transmission of typhoid H. W. Hill.
Sunlight in cities T. Brockmann.
The housing problem E. W. J. Hague.
Economic and racial waste through
insanitary homes and workshops T. M. Molloy.
Town planning and its influence upon
public health A. L. Favell.
Veterinary hygiene and public health C. H. Higgins.

The University of Toronto Medical Bulletin, May, 1914:

- Traumatic lesions of the lower end of
the spinal cord and cauda equina G. E. Wilson and
J. Loudon.

Eclampsia in the fifth month of a twin pregnancy—vaginal cæsarean section—recovery	B. P. Watson.
A case of puerperal streptococcal septicæmia—recovery	B. P. Watson.
Tuberculous ulceration of the glans penis	J. H. Elliott.
Gastric ulcer with profuse hemorrhage: transfusion	J. H. McPhedran.
Arteriosclerosis	V. E. Henderson.
Action of drugs on the uterus	V. E. Henderson.
The treatment of gastric ulcer by excision	E. Stanley Ryerson.

ONTARIO COLLEGE OF PHYSICIANS AND SURGEONS

THE Medical Council of the Ontario College of Physicians and Surgeons held its annual meeting July 7th and 8th. Among other matters that came up for consideration was the importance of a clear understanding of the legal definition of the phrase, "the practice of medicine," as used in the province. After some discussion, the matter was left in the hands of a joint committee consisting of members of the executive committee, of the legislative committee, and a representative of the teaching bodies; it will be reported upon later in the session. A further effort will be made to secure legislation on this point and a resolution was adopted setting forth a list of those who might be considered as claiming to be medical practitioners under the present regulations. The medical aspect of the Workmen's Compensation Act was discussed and the hope was expressed that as the Act became operable, some provision for the payment of medical men would be made. Mr. F. W. Hinsdale, who for three years has been working on problems connected with workmen's compensation in the State of Washington, considered that as the Ontario Act was somewhat of an experiment, there were sound reasons why no provision for first aid had been made. Under the new Act the injured workman will receive full compensation instead of only 20 per cent. of the sum paid by the employer, as it will be no longer necessary to determine

the fault, which in 70 per cent. of accidents really does not exist, and Mr. Hinsdale was of opinion that this fact alone should be sufficient guarantee that the physician's bill would meet with due attention.

A motion was adopted to alter the provisions of the Examination Act. In the past a teacher could not conduct an examination in any subject taught by him. This rule was amended so that a teacher in the future may examine in any subject. On the motion of Dr. Ferguson, seconded by Dr. J. M. MacCallum, the representatives of the Ontario Medical Council were requested to urge upon the Canadian Medical Council the propriety of making Toronto an examination centre alternately with Montreal, irrespective of the examination centre in the western provinces. The motion carried unanimously.

A note of condolence was passed to Hon. Dr. R. A. Pyne on the death of his brother, Dr. A. R. Pyne, and to Dr. E. E. King on the death of his daughter.

The officers elected for the year 1914-1915 are: president, Dr. James McArthur, London; vice-president, Dr. H. S. Griffin, Hamilton; registrar, Dr. J. L. Bray, Toronto; solicitor and counsel, H. S. Osler, K.C., Toronto; public prosecutor, John Fyle, Toronto; official stenographer, Geo. Angus, Toronto; treasurer, Dr. Wilberforce Aikens, Toronto. The next annual meeting will be held in Toronto on July 6th, 1915.

Medical Societies

ALBERTA MEDICAL ASSOCIATION

THE ninth annual meeting of the Alberta Medical Association was held in Medicine Hat on July 16th and 17th. In his presidential address Dr. C. E. Smyth urged the Association to appoint a permanent secretary and also to arrange for a public lecturer to address each convention on some medical subject that would be of general and public interest.

The following papers were read: "Observations on sporothrix bearing some resemblance to the sporothrix beurmonni," by Dr. George E. Learmonth, High River; "Tuberculosis among the North American aborigines," by Dr. D. A. Volume, Erskine; "Tumors of hypophysis," by Dr. J. N. Gunn, Calgary; "Archi-

ture and clothing of the human foot," by Dr. B. E. McKenzie, Toronto; "Radiology of gastric cancer and ulcer and duodenal ulcer with exhibition of slides," by Dr. Carmen, Rochester, Minn; "Matters relating to public health," by Dr. T. H. Whitelaw, Edmonton; "Cardio-vascular studies," by Dr. Alexander Fisher, Calgary; "Remarks on tuberculosis," by Dr. E. W. Diver, Innisfail; "The medical profession a national defence," by Dr. S. Hewetson, Calgary; "Anesthetics," by Dr. Clark, Calgary; "Electrical treatment of disease," by Dr. Nyblett; "Chorea in pregnancy," by Dr. A. V. Brown, Medicine Hat.

A smoker was given on Thursday evening by the Medicine Hat Medical Society. On this occasion Dr. Edwards, of MacLeod, gave an interesting talk on Indian life and exhibited a number of valuable curios, among others being a gorgeous medicine hat, which to the Indian was worth about six horses and formed part of his war costume. All present were astonished at the artistic beauty of these curios and applauded Dr. Edwards' generous offer to present some of them to the Alberta University.

The officers for 1914-1915 are: president, Dr. R. G. Brett, Banff; first vice-president, Dr. J. A. Gunn, Calgary; second vice-president, Dr. Whitelaw, Edmonton; secretary-treasurer, Dr. F. C. Clark, Calgary.

The members of the Council are: Drs. Learmouth, Smyth, Taylor, Holmes, and Atkin.

The representatives from the Alberta Medical Association to the Canadian Executive are Drs. Smyth and Gershaw of Medicine Hat.

Banff was chosen as the next place of meeting.

Dr. O. Boyd pointed out that more money was needed to carry on the work done by the Alberta Medical Association and moved that the College of Physicians and Surgeons be asked for an annual grant of five hundred dollars to facilitate the work and make it more effective. This was unanimously carried. It was resolved also on the motion of Dr. Macdonald that the Canadian Medical Association be petitioned to increase the refund from fifty cents to one dollar for each member.

VANCOUVER MEDICAL ASSOCIATION

The following are the officers of the Vancouver Medical Association elected for the year 1914-15: President, Dr. W. D. Keith;

secretary, Dr. J. H. MacDermot. Medical section: president, Dr. A. Rocke Robertson; secretary, Dr. A. Wallace Bagnall. Surgical section: president, Dr. R. E. McKenzie. Eye and ear section: president, Dr. I. Glen Campbell; secretary, Dr. J. C. Farish.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The twelfth regular meeting of the society was held Friday evening, March 20th, 1914, Dr. D. F. Gurd, president, in the chair.

The evening was taken up by an address from Dr. G. T. Monod, of Paris, who took as his subjects the post graduate system in Paris, and enteroptosis. Drs. Shepherd, Hamilton, and Pirie took part in the discussion.

SHERBROOKE CITY MEDICAL ASSOCIATION

THE usual monthly meeting of the Sherbrooke City Medical Association was held May 20th. The attendance was good and the meeting a very successful one. An interesting paper on the treatment of fractures was read by Dr. Allan, of St. Johnsbury, Vermont. Dr. Edgar, of North Hatley, introduced the question of amalgamating the District of St. Francis Medical Association with the Sherbrooke City Medical Association; the matter will be decided at the next meeting.

HAMILTON HEALTH ASSOCIATION

THE annual meeting of the Hamilton Health Association took place May 28th. A departure has been made during the past year and the Association, instead of limiting its efforts to incipient cases, now treats all cases of tuberculosis, so far as the accommodation at its disposal permits. A grant of \$100,000 was made last year by the city council and this has made it possible to erect a new infirmary and the Southam Home. The preventorium also is being enlarged; it was built originally to accommodate twenty-two children and there is now a waiting list of eighteen little patients. The patients who received treatment through the Association numbered 193; of these 120 were discharged and 5 died, the remainder being still under treatment.

LAMBTON COUNTY MEDICAL ASSOCIATION

THE regular meeting of the Lambton County Medical Association was held in the Englehart Hospital, Petrolea, on May 13th. A paper was read by Dr. John A. Macgregor of London, Ontario, on "Chronic myocardial insufficiency." Dr. Reid, of Wyoming, presented two cases of strangulated hernia, and Dr. Chalmers, of Oil Springs, presented two cases of gall stones. The next meeting will be held in Sarnia during the present month.

MEDICAL HEALTH OFFICERS OF NIAGARA DISTRICT

THE medical officers of health of the counties of Lincoln and Welland met at St. Catharines, Ontario, June 9th. The object of the meeting was to form a society which would bring the members into closer touch with each other and give occasion for discussion of various questions connected with public health. The following officers were elected: president, Dr. King, St. Catharines; vice-president, Dr. Logan, Niagara Falls; secretary, Dr. Howell, Welland; executive committee, Drs. King, Logan, Howell, Merritt of Grant-ham, and Campbell of Thorold.

MEDICAL HEALTH OFFICERS' ASSOCIATION

EIGHTEEN medical officers of health, representing the counties of Wentworth, Norfolk, Haldimand, and Brant, in the province of Ontario, met at the Royal Hotel, Hamilton, on May 21st, at the invitation of Dr. McClenahan, the district medical officer of health. Dr. Thomas Bertram, of Dundas, was elected president, Dr. R. McDonald, vice-president, and Dr. James Roberts, of Hamilton, secretary. The Association will meet in May and October of each year, the next meeting to be in Hamilton in October next. The appointment of county officers to coöperate with local officers was discussed, as was also the establishment of rural laboratories, from which practitioners may be able to secure emergency supplies. These questions will be taken up at the next meeting. A committee was appointed to draw up a constitution and to make by-laws.

The Canadian Medical Association

Place of Meeting, 1915—Vancouver, B.C.

Honorary President—Sir Thomas Roddick, Montreal.

President—Murray McLaren, St. John.

President-elect—R. E. McKechnie, Vancouver.

Vice-Presidents—Presidents of Affiliated Societies and the Presidents of Provincial Societies *ex-officio*.

Secretary-Treasurer—W. W. Francis, 836 University St., Montreal.

Local Secretaries are the Secretaries of Affiliated Societies and the Secretaries of Provincial Societies *ex officio*.

EXECUTIVE COUNCIL

ASSOCIATION'S MEMBERS.

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W. W. White, St. John.

J. G. McDougall, Amherst.

A. I. Mader, Halifax.

J. Stewart, Halifax.

W. G. Anglin, Kingston.

J. F. Kidd, Ottawa.

A. McPhedran, Toronto.

A. Primrose, Toronto.

F. N. G. Starr, Toronto.

H. S. Birkett, Montreal.

J. A. Hutchinson, Montreal.

W. G. Turner, Montreal.

W. A. Thomson, Regina.

H. A. McCallum, London.

DELEGATES FROM AFFILIATED ASSOCIATIONS

British Columbia—A. S. Munro, G. S. Gordon, Vancouver.

New Brunswick—G. C. VanWart, *ex officio*, Fredericton,

J. S. Bentley, St. John; C. T. Purdy, Moncton;

Ontario—D. J. Gibb Wishart, *ex officio*, H. B. Anderson, H. J. Hamilton, Toronto;

I. Olmsted, Hamilton; R. W. Powell, Ottawa.

FINANCE COMMITTEE

W. W. White,

H. S. Birkett,

F. N. G. Starr,

W. G. Turner,

J. Stewart.

J. A. Hutchison,

R. W. Powell,

STANDING COMMITTEES

ON MEDICAL LEGISLATION

A. T. Shillington, Ottawa (with power to add).

MILK COMMISSION

Chairman, Chas. J. Hastings, Toronto.

Secretary, J. H. Elliott, 611 Spadina Ave., Toronto.

ON AMENDMENTS TO CONSTITUTION AND BY-LAWS

H. B. Small, Ottawa, Chairman (with power to add).

ON REPORTS OF OFFICERS

J. Halpenny, Winnipeg (with power to add).

ON NECROLOGY

J. H. Elliott, Toronto (with power to add).

ON MEDICAL EDUCATION

R. A. Reeve, Toronto, Chairman (with power to add).

EDITOR

Andrew Macphail, 216 Peel St., Montreal.

Assistant to the Editor, W. W. Francis, 836 University St., Montreal.

Medical Societies

ASSOCIATIONS DES MÉDECINS DE LA LANGUE FRANCAISE DE L'AMÉRIQUE DU NORD:

President—Dr. A. Rousseau, Quebec. Secretary—Dr. A. Vallée, Quebec.
Will meet in Quebec, August 31st to September 3rd, 1914.

ASSOCIATION MÉDICALE C. F. DE MANITOBA:

President—Dr. J. M. O. Lambert. Secretary—Dr. G. A. Dubuc, St-Boniface, Man.

ASSOCIATION MÉDICALE DE L'OUEST DE MONTRÉAL

President—Dr. E. G. Asselin. Secretary—Dr. Aumont, St-Henri.

ASSOCIATION MÉDICALE DU COMTÉ DE JACQUES CARTIER:

President—Dr. P. A. Valois. Secretary—Dr. Beaudoin, Lachine.

ASSOCIATION MÉDICALE DU COMTÉ DE PORTNEUF:

President—Dr. A. Larue. Secretary—Dr. Thos. Savary, Pont-Rouge.

ASSOCIATION MÉDICO-CHIRURGICALE DU DISTRICT DE JOLIETTE:

President—Dr. C. Bernard. Secretary—Dr. A. Roch, St-Gabriel de Brandon.

SOCIÉTÉ MÉDICALE DE CHICOUTIMI ET DU LAC ST-JEAN:

President—Dr. Poliquin, Chicoutimi. Secretary—Dr. A. Riverin, Chicoutimi.

SOCIÉTÉ MÉDICALE DE MONTMAGNY:

President—Dr. Gosselin. Secretary—Dr. Paradis, Montmagny.

SOCIÉTÉ MÉDICALE DE MONTREAL:

President—Dr. J. P. Décarie. Secretary—Dr. Wilfrid Derome.

SOCIÉTÉ MÉDICALE DE RIMOUSKI:

President—Dr. L. F. Lepage. Secretary—Dr. J. A. Ross, jr., Ste-Flavie Station.

SOCIÉTÉ MÉDICALE DES COMTÉS DE BEAUCE ET DORCHESTER:

President—Dr. Fortier. Secretary—Dr. L. M. Déchéne, Beauceville.

Regular meetings, March, June, September, and December.

SOCIÉTÉ MÉDICALE DE ST-JEAN (IBERVILLE).

President—Dr. Moreau. Secretary—Dr. Duval (St-Jean d'Iberville).

SOCIÉTÉ MÉDICALE DE ST-HYACINTHE:

President—Dr. J. C. S. Gauthier, Uptown. Secretary—Dr. J. A. Viger, de St-Hyacinthe.

SOCIÉTÉ MÉDICALE DE SHEFFORD:

President—Dr. N. H. Blunt, Granby. Secretary—Dr. Wilfrid Lord, Granby, Co. de Shefford.

Regular meetings twice a year.

SOCIÉTÉ MÉDICALE DE TROIS-RIVIÈRES:

President—Dr. DeBlois, Trois-Rivières. Secretary—Dr. O. Darche, Trois-Rivières.

SOCIÉTÉ MÉDICALE DE VALLEYFIELD:

President—Dr. M. E. Deguire, Coteau du Lac. Secretary—Dr. A. Brassard, Valleyfield.

SOCIÉTÉ MÉDICALE DU COMTÉ DE CHAMPLAIN:

President—Dr. Trudel. Secretary—Dr. Bellemare, St-Narcisse.

SOCIÉTÉ MÉDICALE DU COMTÉ DE KAMOURASKA:

President—Dr. B. Vézina, St-Alexandre. Secretary—Dr. U. J. I. Pajean, Ste-Anne.

Regular meetings, February, June, and October.

SOCIÉTÉ MÉDICALE DU COMTÉ DE MASKINONGÉ:

President—Dr. L. A. Plante, Louiseville. Secretary—Dr. A. A. DuHamel, Ste. Ursule.

SOCIÉTÉ MÉDICALE DU COMTÉ DE TERREBONNE:

President—Dr. Grignon, St. Jérôme. Secretary—Dr. H. Prevost, St. Jérôme.

SOCIÉTÉ MÉDICALE DU COMTÉ DE WOLFE:

President—Dr. Thibault. Secretary—Dr. A. Pelletier, St-Camille.

Regular meetings, the first Tuesday of March, June, September, and December.

SOCIÉTÉ MÉDICALE DU DISTRICT D'OTTAWA:

President—Dr. E. Aubry, Hull. Secretary—Dr. J. E. D'Amour, Papineauville.

LA SOCIÉTÉ MÉDICALE DE QUÉBEC:

President—Dr. E. M. A. Savard. Secretary—Dr. Edgar Couillard.

The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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The Canadian Medical Association Journal

VOL. IV.

SEPTEMBER, 1914

No. 9

THE MEDICAL PROFESSION AND THE MILITIA

BY J. A. GRANT, M.D.

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THE present efficiency in the Military Medical Service was inaugurated sixty years ago by Sidney Herbert—or Lord Herbert of Lea. He commenced his noble work of bettering the welfare of the soldier at the time of the Crimea, and one can hardly realize the condition that existed at that time. Winter was approaching. The army, which was to have occupied quarters at Sebastopol, had no shelter and no change of clothing. Balaclava, the immediate source of supplies, was connected with the army by no adequate roads and, in consequence, nothing was done to supply the army with the tents, stores and supplies which it needed. The great storms of November made the roads almost impassable. Munitions and stores intended for the army were sunk in the waves of the Uxine. Cholera attacked the troops; no comforts and few drugs or dressings were obtainable for the sick and wounded; and the army melted away. Even Lord Stratford de Redcliffes, who was on the spot, was so little aware of the wants of the hospital, that he coolly proposed that the money subscribed for the relief of the patients be applied to the erection of an Anglican church at Constantinople. It was due to Sidney Herbert, in his work at the War Office, that a more satisfactory state of affairs was introduced, and the contrast between sanitary conditions of the army now and its sanitary condition when Sidney Herbert found it can hardly be expressed in words. The next notable achievement in organizing a medical service for the army was inaugurated by Surgeon

Read before the Canadian Medical Association, St. John, N.B., July 7th, 1914.

Jonathan Letterman, United States army. An Act of Congress, March 11th, 1864, approved the organization of a medical service for the army of the Potomac. Letterman's system was adopted, and was at the time the most efficient that had ever been elaborated. This system was adopted by every Continental Power. It was the outcome of long practical experience and developed during the stress of trying campaigns. The fundamental principles hold good to this day, and Letterman will ever be known for having laid the foundation for the present system of Military Medical Service, thus having rendered incalculable service in reducing the horrors of war.

Since then enormous strides have been made. The importance of the medical department as a military factor is now well established. A good general may have to undertake operations which involve the sacrifice of a portion of his forces to disease, but while this is true there have been, and may again be, critical periods when the whole aspect of a campaign will depend less upon the general plan, the bravery of the troops, the preponderance in numbers or advantage of position, than upon a well organized medical service. A distinguished Japanese officer, when discussing the subject of Russia's overwhelming number before the commencement of the war, said: "We are prepared for this. We expect Russia to place two million men in the field. We can furnish five hundred thousand. We know in war four men fall from disease for every one who falls from bullets. That will be the position of Russia in the war. We propose to eliminate disease as a factor. Every man who dies in our army will fall on the field of battle. In this way we shall equalize the superiority of Russia's numbers." And the result was fairly as he predicted.

Innumerable proofs exist of the enormous effects produced by disease on the conduct of a campaign. To refer only to the South African campaign, 69 per thousand died from disease, while 42 per thousand died from wounds; and in the death roll of about 15,000, over 9,000 died from either enteric or dysentery, both preventible by proper sanitary arrangements. The highest function of the medical practitioner is to "heal the sick"; and the general public are apt to think that such is the case with the medical officer, and that one who is fully qualified to relieve pain, cure sickness and undertake surgical operations, is fully prepared to fill the rôle of a military surgeon. A short time, however, on active service would show how different are the surroundings of civil and military medical work; and no matter how competent a physi-

cian or surgeon may be, still in order that he may render equally efficient service in a campaign, there are numerous military details and much routine that must first be mastered. The medical officer is becoming more and more a specialist, and the more insight that is gained into the military side of the work, the more useful does he become.

Let me give a short outline of the military medical work as it exists in the various militia camps held each year in the six Divisional Areas in Canada:

1. The medical staff is composed of an Assistant Director of Medical Services, called A.D. of M.S., who is responsible for everything pertaining to the medical service in camp, including administration, organization, sanitation, duties, equipment, discipline, etc.

2. The Deputy Assistant Director of Medical Services, who assists the Assistant Director of Medical Services. This appointment is only occasionally made. For instance at Sussex Camp, just over, there was none.

3. The Sanitary Officer. He is responsible for, and gives his whole attention to, the installation and conservation of sanitary measures in camp.

4. The Instructor of Medical Units. This is a Permanent Army Medical Corps officer who supervises and assists in every way the carrying out of the training as printed in the syllabus, which is part of the Memorandum for Camps of Instruction, issued at Headquarters, Ottawa, by the Department of Militia. He is assisted in this work by two non-commissioned officers from the Permanent Army Medical Corps.

Then there are the following:

1. The Standing Medical Board. This is composed of three medical officers, one acting as president. They have to report on all cases of injuries occurring among the troops, also on all serious cases of illness.

2. The Orderly Medical Officer of the day. He is on duty for twenty-four hours. He is a member of the meat inspection board, visits the hospital and every part of the camp on his rounds, and forwards his report to the Assistant Director of Medical Services. Regimental Medical Officers hold their sick parade at 6 a.m. and 5 p.m. All cases not able for duty they send to the Clearing Hospital. They are responsible for the training of the regimental Bearer Section both in stretcher drill and first aid. Each is responsible for the health of the troops of his unit, and the

sanitary condition of the regimental lines. They are also available for duty as Orderly Medical Officer or Range Officer.

3. The Range Officer is detailed daily from among the various medical officers in camp, and is on duty at the rifle range from 8 a.m. to 5 p.m. Regulations require a medical officer's presence when ball ammunition is being fired.

4. The Officer commanding a Clearing Hospital. He has an establishment of six officers and fifty non-commissioned officers and men, with equipment for twenty-five beds, also transport, and is responsible for the organization and equipment of the hospital in all its details, as well as keeping it up to establishment.

5. The Officer commanding a Field Ambulance. He has under him ten officers and one hundred and two non-commissioned officers and men together with transport and equipment. He is responsible for the recruiting of his regiment, both in officers and men, as well as for their training and discipline. He is responsible for his transport animals and for the management and care of his camp lines.

7. Provisional Lieutenants. These are officers who have made application to join the Army Medical Corps but have not yet qualified. For them a course is given in camp lasting twelve working days, which includes six lectures in organization and duties and six in sanitation, in both of which they must pass a written examination at the end of the camp. They must, also, pass a practical examination in infantry drill and stretcher drill, and take an examination in equitation.

A tactical scheme, or sham fight, is held on the last training day in camp and every officer and man in each branch of the service is given an opportunity of demonstrating his ability to conduct his part of the military operation exactly as he would on active service in the field, which is the ultimate object of all training.

Formerly all regimental surgeons joined a regiment directly, wore the uniform of the regiment and remained with this regiment, training themselves in military medical work as best they could, and their promotion came with time of service automatically. Now, after applying for appointment to the Army Medical Corps and taking a qualifying course successfully, officers are detailed for duty to a regiment, a field ambulance or a clearing hospital, as the case may be, and all wear the Army Medical Corps uniform. Promotion comes by seniority on the Army Medical Corps list, but each step in rank, namely, majority and lieutenant-colonelcy, require further examinations in more advanced work.

The medical history of all wars shows plainly that any failure on the part of the medical department cannot be attributed to lack of professional efficiency on the part of the physician or surgeon, but to a lack of appreciation of the necessity for adequate military training. In time of war adequate numbers of qualified practitioners of medicine can be secured without trouble, but not those who understand the numerous details necessary to bring the wounded, the surgeon, and the medical and surgical equipment together at the proper time and place for efficient service, and so coördinate the work from firing line to base, that there will be no break in the chain. Take the smallest military unit, composed of all arms, a division of infantry numbering about twenty thousand troops. When on the march this occupies about eight miles of road space. In action front, two to three miles. In this we have medical officers attached to regiments and other units, in addition to medical officers in the three field ambulances allotted to a division. Each has his own particular task allotted and each must know how to carry out the work under the varying phases of warfare. The regimental surgeon will be in the firing line, supervising and assisting in rendering first aid to the wounded, forming his aid post, where the wounded are collected, treated, protected and prepared for transport to the rear at the earliest opportunity. Back of these regimental aid posts, the field ambulance commanders are establishing dressing stations, through which the wounded from the front pass for inspection and further treatment if necessary.

These dressing stations are well equipped with medical and surgical material quite sufficient for a field hospital. By Army Medical Corps operation orders the officer commanding the field ambulance has been assigned his zone of action. He knows the regiments in action at his front, and his bearers must get in touch with the regimental bearers and evacuate the wounded along the proper route, which is also given in Army Medical Corps operation orders. Although the officer commanding has such an ample supply of medical and surgical material, still he has to remember that a field ambulance is a mobile unit and must be prepared to move as early as possible.

In this zone, called the clearing zone, we also have a collecting station for slightly wounded, where those able to walk are directed, thus relieving the dressing station of unnecessary work. It is wonderful the number of the wounded—about 75 per cent.—who are able to make their way back without assistance, thanks to the

size and velocity of modern rifle projectiles. It is this that has led to the establishment of the Divisional Collecting Station for slightly wounded. It is of comparatively modern origin, and one can easily understand how it lessens the difficulties of handling the more severely wounded. This station is mentioned in Divisional as well as Army Medical Corps operation orders, as it is most important that its location should be known to all ranks.

Back of these we have our Clearing Hospital where the wounded are received from the dressing stations. These clearing hospitals are very important units. They receive the wounded from the aid posts and dressing stations and thus the regimental surgeons and field ambulances are free to move as soon as they have handed over their wounded and packed their equipment.

But even from here these wounded must soon be moved, if that most important factor in a campaign is to be maintained in its efficiency, viz., the mobility of the army; and to a great extent the whole frame work of the medical service is organized with a view to increasing the mobility of the army, or to get the sick and wounded away from the front as soon as possible, so that the army may be free to move. The regimental surgeons, field ambulances and, to a certain degree, the clearing hospitals, must be prepared to move at the earliest possible moment and this can only be done when they are free of their wounded.

There was a time when one heard of major operations being performed at the front and even during an engagement, but such is seldom the case now. In the Japanese war, little more than first aid was given in the fighting area and experience shows that this is a proper course to pursue.

There is another reason for making the medical department as perfect as possible, namely, it contributes greatly to the *morale* of the troops. If a soldier knows everything has been done to give him efficient care in case he is wounded, it nerves him greatly for the conflict. Cases such as Magersfontein, where many of the wounded lay unattended for nearly twenty-four hours in spite of vain efforts to reach them, are very rare; but within forty-eight hours of the close of that action, six hundred and eighty-five wounded were treated, moved to Modder River, ten miles distant, and from there by ambulance train to Orange River and De Aar. At Mukden the Russians brought the line of railway right up to the front and the Japanese used thousands of Chinese coolies to evacuate the wounded, so important is the problem.

The casualties in an army amount to from 20 per cent. to

25 per cent. of the fighting forces, and with the increased power and range of modern fire-arms, together with the added danger from aerial warfare, the percentage may be augmented in the future. In a division we would thus have over four thousand wounded to care for and and furnish transport for. One regimental officer for each unit and three field ambulance units with ten officers each, making a total of about forty medical officers and about seven hundred non-commissioned officers and men, would be the total personnel available for this work.

In Canada we have six divisional areas and the peace establishment for medical service is almost complete, thanks to the good work carried on during the last fifteen years by Colonels Neilson, Fiset, and our present Director-General, Colonel Jones. The requisite number of regimental surgeons, field ambulances, cavalry field ambulances and clearing hospitals are already fully established and equipped, but in addition to these, in time of war, we would require stationary hospitals, convalescent depots and base hospitals, together with a large medical personnel for the management of sanitation. At present we have a militia force of about 50,000 men that train annually. In case of war this force would be greatly increased, which would mean that mobilization would take place in every part of Canada, each recruit would have to be examined medically, maintained in health, treated when sick, infection guarded against, all sanitary arrangements attended to, medical supplies and stores procured, and many new field ambulances organized. You can thus see that it would be an impossible task for our present peace organization of the Medical Department.

Ample facility is offered each year for the medical practitioners all over Canada to take a course in military medical work, not only at the various camps where the militia are trained, but wherever there is a detachment of the permanent force a course could be obtained at any time. Not only this, but often special courses have been held in many of the larger cities when occasion arose. Having once taken a course and passed successfully, you attain the rank of lieutenant in the Army Medical Corps, and thus your services in the event of war would be given to the medical service and your professional knowledge not lost as it would be if you were drafted into the ranks as a private. When possible it is always well to take this course in one of the camps, as it is more practical, and you see all the work carried out before you. Squad, infantry, and stretcher drills are going on every day. You go around the lines with the Sanitary Officer and see not only the construction

but the practical working of a camp incinerator and garbage pit; how a patient is admitted and discharged from hospital; how ward orderlies, orderly officers and quartermasters perform their duties; and numerous details that can only be seen in camp. It is a healthy training and taken in the noblest cause, that of preparing ourselves to aid our country in time of stress.

When I tell you that the medical personnel for time of peace is almost up to establishment and that we have over seven hundred officers ready for service, it gives you an idea of how nobly the medical profession in Canada has responded to the country's call. All over Canada the class of men who are taking up this good work are most desirable; many of them are the best and busiest of our practitioners and many noted specialists. To give an example I cannot do anything fairer or better than to point to this city of St. John where this, the most important medical meeting of the Dominion, is now being held; and to the many military medical men living here who are Army Medical Corps officers. I find your president, Lt.-Col. Murray MacLaren, Lt.-Col. T. Walker, and Lt.-Col. T. D. Walker, who have all rendered long, praiseworthy, and conspicuous service in the army medical work. Looking around I see Ford, Amyot, Bishop, Anglin, Curren, Duval, Irving, McKinnon, and others, all of whom are very valuable members of the Army Medical Corps. Let the younger members of the profession look where they will they will find in Canada medical men giving much of their time and ability to this work, men whom it is a privilege to be associated with and whose example they would do well to follow. The Militia of Canada is bound to increase in time. We now have many of our Canadian universities taking up the question of military training for the students. There is no question but that this is coming and that in connexion with all of our universities, armouries will be established by the Militia Department, where this training will be given. There is no reason why, in connexion with the various medical schools, some arrangements should not be made by which a course of training in military medical work could be given, that would not interfere with the curriculum. It would be voluntary on the part of the students and given in whichever year the faculty thought most desirable. There is also a further valuable field for the energy of medical officers, namely, the training of sections of the various philanthropic organizations formed to render first aid and comforts to the wounded. I refer to the St. John's Ambulance Association, the Red Cross Society and the Voluntary Aid Association. These societies are

of incalculable value in time of war and there is no civilized country in the world that has not vast numbers of people associated with this work.

The older men will let their mantles fall on the younger ones whom they have had under their guidance and training in military work, so that recruits are always wanted. Although we have within sight our peace establishment, still there is the greater task of a war establishment. I have endeavoured as briefly as possible to show you the duties and responsibilities of the Army Medical Corps, as well as the necessity for it. That the younger men may take their first opportunity of qualifying for the Army Medical Corps and that the older practitioners aid and encourage them in every possible way to do so, is my object in writing this paper.

At its meeting on July 13th, the Executive Committee of the General Medical Council formally adopted as *The British Pharmacopœia*, 1914, the completed draft submitted by the Pharmacopœia Committee. It was resolved that copies, in advance of publication, should be made accessible to the public for inspection at the offices of the Council in London, Edinburgh, and Dublin on August 10th, and thereafter. The official publication of the new *British Pharmacopœia* will be made by notice in the *Gazette* on October 9th, on which day copies will be on sale by the publishers, Messrs. Constable and Company, Limited, 10 Orange Street, Leicester Square, London, W.C. The price has not yet been settled by the Treasury.—*British Medical Journal*, July 18th, 1914.

THE TREATMENT OF EMPYEMA, SUBPHRENIC ABSCESS, ETC., BY ASPIRATION FOLLOWED BY INJECTION OF FORMALIN SOLUTION

BY ALEXANDER MCPHEDRAN, M.D., TORONTO

THESE diseases are the cause of much, not rarely of grave, anxiety, both from the discomfort they produce and their protracted course, and too often their unsatisfactory result. Any means that promises to lessen the discomfort and danger and at the same time secure a complete recovery would be welcome both to physician and patient. Of late I have resorted to aspiration followed by injection of formalin solution with gratifying results.

CASE 1. A babe about one year old was admitted to the Toronto General Hospital in February, 1912, very ill and emaciated. There was pneumonia of the lower part of the right lung. In a few days there was improvement, the pneumonia having apparently terminated. Although improved, the temperature did not fall below 100°F. Examination indicated the probable presence of pus in the fissure between the middle and lower lobes. The needle of a large exploring syringe was inserted and about 30 cc. of creamy pus obtained containing pneumococci. Before withdrawing the needle 2 cc. of 2 per cent. solution of formalin in glycerin was injected. The temperature soon fell to normal and complete recovery rapidly followed. In children pneumococcic empyema is not rarely cured by simple aspiration, especially if they are fairly vigorous, but this child was in a miserable state and it is fairly reasonable to suppose that pus would have re-accumulated.

CASE 2. A young man was admitted during the past winter, 1914, with pneumonia of the bases of both lungs. He was very ill, but the crisis was fairly definite, although somewhat delayed; the temperature fell, but not quite to normal, and in a day or two rose again. Signs of pus were found in the left side a little outside the apex of the heart. This area was explored and a few ounces of pus obtained, the infecting organism being the pneumococcus. Four cc. of the formalin solution, about as much as could be given easily, was injected before withdrawing the needle. He

made a rapid recovery and left the hospital in good condition. A few days afterwards he reported himself quite well and ready for work.

CASE 3. A man aged twenty-two years came to the Toronto General Hospital on April 21st, 1914, with pneumonia of the left lower lobe. This rapidly improved but in a week's time the right lung became infected, the lower and middle lobes becoming consolidated. In a fortnight's time this had not improved and the area of dulness on the right side slowly but steadily increased. Aspiration was done in the ninth interspace in the postaxillary line, 4 cc. of turbid straw-coloured fluid being obtained. A week later 100 cc. of almost clear fluid was withdrawn from the eighth intercostal space below the scapula. This fluid contained many cocci in short chains. A week later the temperature still remaining high but oscillating two to three degrees a day, he was aspirated in the fourth space in the anterior axillary line, and 70 c.c. of pus was obtained from two cavities. A distinct wall could be felt between the two; 15 cc. of 2 per cent. formalin in glycerin was injected into each cavity. Very little improvement followed and in four days a portion of a rib was resected in that region and two clean cavities found. No pus was found anywhere. After that he improved slowly but steadily; still the temperature continued variable, a little above normal.

June 17th, three weeks later, the needle was inserted in the eighth interspace three inches from the spine and directed inwards and upwards. It entered a cavity, doubtless in the interlobar fissure. About 120 cc. of pus was withdrawn containing many cocci. The cavity was washed out with 90 c.c. normal saline, and then with the same quantity of 0.5 per cent. formalin solution, after which 30 cc. of 2 per cent. formalin solution was injected into the cavity. A slight chill followed and the temperature rose to 103.5°, but fell in four days to 99.5° in the afternoon. The fluid obtained after washing the cavity with the 0.5 per cent. formalin solution proved to be sterile.

June 30th. The cough which had been slight became troublesome, and some frothy mucus was expectorated.

July 4th. Expectoration mucopurulent, 150 cc. in twenty-four hours, separating into three layers—frothy, liquid and purulent. Pneumococci abundant. The right side of the chest is considerably contracted and has little mobility. On x-ray examination the apex is found fairly clear; at the third costal cartilage the shadow is fairly marked and probably due to the formation of an abscess

from which the expectoration comes. Over the cavities treated the screen and plate show fairly clear areas.

July 5th. The full area at the third costal cartilage aspirated and 40 cc. of thin pus obtained. Ten cc. of the solution was injected.

CASE 4. SUBPHRENIC ABSCESS. F. C., a lad aged sixteen, was admitted in January to the Toronto General Hospital with definite symptoms and signs of subphrenic abscess. It was deemed wise to try aspiration followed by injection of the formalin solution. The needle was inserted in the mid-axillary line below the base of the lung. It entered the abscess cavity and 120 cc. of rather thick pus mixed with blood was withdrawn. The infecting organism proved to be staphylococcus aureus. Ten cc. of 2 per cent. formalin solution was injected, which was as much as the cavity would contain as it had collapsed on the withdrawal of the pus. The temperature fell to nearly normal and after a day or two began to rise again and the leucocytosis remained moderately high. A few days later the cavity was again aspirated, but only about 20 cc. of pus and blood, chiefly the latter, was obtained and 8 cc. of the solution injected. He improved rapidly and appeared very well in a few days, but the temperature rose a little every afternoon. A third aspiration was done, but only 10 cc. of blood obtained. Only 4 cc. of solution could be injected. The temperature fell to normal and remained so, although the leucocytes in the blood continued moderately high. His health was quite restored, but he was kept in the hospital for some days longer. He reported later and was found quite well. The third aspiration was probably unnecessary and possibly also the second. This method of treatment was much safer and less trying to him than open drainage, and his complete recovery much more rapid.

CASE 5. (For the notes of this case I am indebted to Dr. F. Arnold Clarkson, with whom I saw her in 1913.) Mrs. P., aged forty-three, was operated on in 1906 for gall-stones, and the gall-bladder was drained. No gall-stones were found. Severe colic returned in 1910, and she again underwent operation in 1911, the gall-bladder this time being removed. Pains returned in six months. A third operation was done in 1913, and a small stone found at the papilla of Vater. The duodenum was opened to remove the concretion. Duodenal fistula was formed four days later, and remained patent for seven weeks, the temperature ranging from 99° to 102°. Pleurisy with effusion followed and was twice aspirated. Then a subphrenic abscess formed. In March, 1914, this was aspirated and 12 ounces of stinking pus withdrawn, followed by

some improvement for a week. Then fever and cough returned. Aspirated again in April, 6 ounces of pus being obtained, one ounce of 2 per cent. formalin in glycerin was injected into the abscess cavity. She has since made a slow but steady improvement. Temperature became normal one week after the last aspiration. At present (June 16th) both signs and symptoms have nearly disappeared. This patient was in such poor condition in April as to put all thought of the usual operation for subphrenic abscess out of the question.

CASE 6. This patient was under the care of Dr. C. D. Parfitt, Gravenhurst, who has kindly furnished me with the following report. The patient had an empyema which was aspirated, 500 cc. of sterile pus being removed. The cavity was then washed with saline solution. At intervals of ten days to two weeks this was repeated twice and each time about 150 cc. of pus was removed. The patient was more comfortable after these aspirations and irrigations and there was a fall in the temperature for a few days. After the fourth irrigation 40 cc. of the formalin-glycerin solution was introduced. This caused great pain at the time and much soreness subsequently. The temperature was not reduced and subsequently rose to a somewhat higher daily maximum. Soreness over the area of the empyema persisted and there was a feeling of tension. A fortnight later 300 cc. of rather thinner but blood-stained pus was removed.

Dr. Parfitt gave the injection after a conversation I had with him regarding the foregoing cases. This case differs from the others in the fact that the pus was sterile, in which case no beneficial effect could result from an antiseptic injection, unless there were organisms in the wall of the cavity, which might be destroyed, an improbable supposition. I do not know how to account for the pain, as in the others there was little, if any, pain apart from that caused by the introduction of the needle. It is possible that more of the solution than necessary has been used. This inference seems borne out by the fact that the fluid withdrawn in Case 3 after injecting and then removing a 0.5 per cent solution was found sterile. From 2 to 5 or 6 cc. will probably suffice in cavities of moderate capacity.

The importance of early intervention in all cases of purulent collections, at least such as these, cannot be too strongly emphasized. Even if the fluid is only barely opalescent and infecting organisms are present, disinfection or draining should be resorted to at once, at least in adults. By delay ulcerative processes begin, increase rapidly, and result in greater cicatrization.

LINITIS PLASTICA

BY G. E. ARMSTRONG, M.D.

Montreal

ONE of the peculiar and interesting experiences of practitioners of medicine, and the same holds true of surgery, is that cases closely resembling each other, diseases that are rare, often come in clusters or groups. So far as I know, I met my first case of linitis plastica in December, 1912, and during the succeeding eleven months two others came under my care. These three, together with one in the service of my colleague, Dr. Garrow, are the only ones appearing on the records of the Royal Victoria Hospital.

Linitis plastica is a name given by Brinton in 1854, in his classical work on diseases of the stomach, to the old leather-bottle stomach, a condition recognized for a couple of centuries. It is also known by the names of fibrosis of the stomach, cirrhosis of the stomach, diffuse carcinoma of the stomach and fibromatosis of the stomach. The latter name was used by Thomson in his excellent paper which he read before the American Surgical Association in 1913. Lyle, who has gone very thoroughly into the literature of the subject, found twenty-one synonyms but those that I have mentioned are the more familiar.

Two of my three cases were women, although it appears that the disease is more common among men. Their ages were fifty-five, sixty-four, and sixty-one, thus harmonizing with the statistics which show it to be a disease of adult life. The symptoms in my three cases were somewhat similar, distress rather than pain, coming on immediately after meals and accompanied by nausea, vomiting on rare occasions, the gastric distress being partially relieved by emptying the stomach, flatulence and loss of weight,—a group of symptoms that can hardly be called distinctive. The analysis of the stomach contents was of little help in the diagnosis. The HCl was not diminished nor was the total acidity. In two of these cases the serious loss of weight and strength followed upon periods of twenty and fifteen years of recurrent attacks of indigestion. In the third

case the gastric disturbance was of only one year's duration. In all of them the radiographs showed pyloric narrowing, but in none of them was retained food to be found. In one there was a moderate gastrectasia. None of them gave a history of vomiting of blood, and in none of them was occult blood found in the stools after a meat-free diet. My third case had been treated very carefully for many years by most competent physicians, and had visited many of the more celebrated health resorts and spas. In addition to the gastric disease she had developed an inveterate and disfiguring eczema over the face and neck. None of them reacted to tuberculin and in all of them the Wassermann was negative.

In all of them I did a partial gastrectomy, removing all that portion of the stomach that was at all thickened, closing the duodenum and stomach and then performing a posterior jejuno-stomy. The convalescence in each case was remarkably smooth and uneventful.

The pathological reports on the portions of the stomach removed are interesting. In the first, a male aged fifty-five, the pyloric opening was narrowed, the ring increased in thickness and firm to the feel. One area on the duodenal surface showed a hard, cup-shaped nodule much thicker and firmer than the surrounding tissue. This is worthy of note as in many of the reported cases the disease ended abruptly at the pyloric ring and did not extend into the duodenum. The walls of the stomach everywhere were increased in thickness, the mucous membrane presented a rugose appearance. Careful search through the region of the disease failed to show any evidence of carcinoma. The stricture is due to the development of an excessive amount of fibrous tissue in the submucosa and in the peritoneum. The fibre cells are coarse and in places becoming myxoid. Capillaries are very abundant. The deeper parts of the gland cells are degenerating. The muscularis is very hypertrophic. The fibres are separated by oedematous material. There are some perivascular lymphomas. The changes are those of linitis plastica, the case fitting in with the granulomatotic form of unknown etiology, although in this case the infiltration is mostly submucous while the fibrous deposit is peritoneal.

In the second case, a female aged sixty-four, the primary mucosal lesion is in evidence. There is an area about 2 cm. in diameter, the covering of which is very smooth and different from that of the rest of the specimen. Close to this the mucosa is wrinkled up. Beneath the smooth area the wall is white and very firm. The mucosa is completely lost and the surface is formed by

the submucous layer which is unduly fibrous and thickened and shows a very slight infiltration with inflammatory cells. The muscular bundles are clearly marked off from each other and the fibrils are vacuolated.

In the third case the folds of the lining are well shown except in one area about 3 cm. in diameter, and here the mucous membrane is very smooth. Microscopic examination reveals the existence of a cellular infiltration of the submucosa, causing it to be expanded to about twice the normal thickness. The glands are few in number, distorted in outline, and in most cases only the fundi are preserved. Their lining cells are not functioning. Their mouths are separated by superficial ulcers whose floor is formed of infiltrated tissue similar to that present in the mucosa, traversed by horizontal lines of widely separated but hypertrophic muscle fibres belonging to the muscularis mucosa. Plasma cells, endothelioid cells, eosinophilic tissue cells, young fibroblasts, and the intermediate stages in the process of fibrosis from hyperplastic tissue cells are noted in the interglandular tissue of the specimen. It is easy to see these cells lying free in the tissue spaces, bathed in lymph. No evidence of carcinoma.

The accumulated reports of many writers on linitis plastica, or fibromatosis of the stomach, show that the condition has been observed in a more or less localized form in one group and in a more or less diffuse form in another group of cases.

In the first group the disease may have produced only very circumscribed patches or plaques. Only a few instances of these plaques have been reported. In the more common localized form the region of the pylorus and antrum are thickened. The walls of the stomach in this region are sufficiently thickened to cause narrowing of the outlet. This is a common type. In the majority of the cases of linitis so far reported, the symptoms have been distinctively those of pyloric obstruction. In my cases 7 to 8 cm. of the distal end of the stomach was definitely altered, and to the feel was hard and dense. The disease ends abruptly at the pylorus. I have only found in the literature a few exceptions to this rule. In these exceptional cases the thickening of the submucosa is reported to have extended into the first half inch of the duodenum. Passing from the antrum to the cardiac end of the stomach the disease does not end abruptly as at the pylorus but gradually shades off into healthy tissue. It is worthy of note that in these cases dilatation of the stomach is rarely found.

In the diffuse form the greater part or the whole of the stomach

may be involved. The thickening of the stomach walls is accompanied by diminished stomach capacity. Brinton found the submucosa in extreme cases ten to twenty times its normal thickness, the serosa and subserosa seven to ten times, the muscularis five to eight times, and the mucosa two to three times. The stomach may be reduced in size to that of a segment of the large intestine. In Stretton's case the capacity of the stomach was only one and a half ounces. In this case the symptoms were those of œsophageal obstruction. A very interesting feature is that notwithstanding the great thickness of the walls the layers remained distinct. When the stomach is removed in one of these cases of diffuse linitis it retains its form, its rigid walls do not collapse.

The disease is progressive and tends to destroy life. In forty-three cases collected by Lyle, in which the duration of the symptoms was given, the shortest was 3 months, the longest 20 years, and the average 49 months. In thirty-seven cases of the so-called malignant type, the shortest duration was one month, the longest 15 years, the average 23.9 months.

The thickening of the stomach wall occurs primarily and chiefly in the submucous layer. It spreads along this layer and, for a considerable time at least, the disease remains limited to the submucous coat. As the disease advances the other layers become involved secondarily. The constant lesion is a hypertrophy of the connective tissue elements of the submucosa and there may be an endarteritis. When the peritoneum becomes involved adhesion to adjoining organs takes place, especially adhesions to the transverse colon. At this period there may appear symptoms of partial obstruction, constipation or diarrhœa, and towards the end, ascites and œdema.

There would seem yet to be a difference of opinion regarding the nature of this disease. By the majority of writers, including Andral, Cruveilhier, and Broca, it is regarded as benign, and by Rokitansky and many others as malignant. Brinton held very strongly that the affection was benign. On this point Welsh says that "a large proportion of the older cases found in the literature reported as cirrhosis of the stomach are in reality diffuse cancer of the stomach." We have three diseases which can produce gross alterations in the stomach indistinguishable from each other to the naked eye: cirrhosis or fibroid thickening of the stomach, primary infiltrating carcinoma of the stomach, and secondary infiltrating carcinoma of the stomach. There are cases reported in which, although no cancer was found in those portions of the stomach

wall examined, yet some of the lymph nodes were cancerous. It is perhaps too soon to say definitely whether linitis plastica is always malignant or always benign, but this much can be said, that in many instances no evidence of malignancy has been found in the portions removed and examined, and the patients have died from other diseases before any sign of malignancy had developed in the parts remaining.

We are also very much in the dark regarding the etiology. There is nearly always an ulcer of the mucosa present. If the infection occurs through the base of an ulcer it probably spreads along the lymphatics. On the other hand, linitis plastica must be admitted to be a rare complication of gastric ulcer. None of my cases reacted to tuberculin. I have excised one definitely tuberculous ulcer from the pylorus in which there was nothing present at all resembling linitis, and the same holds true in lues. Aschoff regards cirrhosis of the stomach wall as a sequel to chronic catarrh, the fibrous thickening extending from the mucosa to the outer coats of the stomach. In Leith's cases the change was found throughout the gastro-intestinal tract from the stomach to the rectum, excepting the duodenum and the upper jejunum. Nothnagel thinks it originates in the peritoneal coat. On the other hand, Bret and Paviot maintain that the condition is always malignant. Patterson gives three very good arguments against the view that it is always malignant, viz., that in cancer the layers of the stomach wall cannot be differentiated, the infiltration is chiefly in the mucous coat and there is usually an ulcerated mass in the interior of the stomach. I think that I shall be able to show you in the lantern slides prepared by Dr. Gruner that conditions are present in linitis plastica that favour the development of cancer cells, in other words, that the fibromatosis of the submucous layer may be considered as one having a tendency to become malignant.

TREATMENT. A correct diagnosis of linitis plastica has seldom been made before operation. In 1896, Deguy diagnosed a case as linitis and the diagnosis was proved to be correct by autopsy and microscopical examination, and Sir William Osler diagnosed a case correctly in 1901. These are the only two instances of a correct diagnosis having been made that I have found in the literature. When the abdomen is opened the surgeon is seldom able to differentiate linitis from carcinoma. I think it is probably correct to say that a correct diagnosis is impossible without an examination of microscopical sections. Nearly all cases operated upon up to the present have been regarded by the operator as malignant. Nor

can one say that this is unfortunate for the patient. The diseased portion should be removed in *linitis*. A condition about which there is so much doubt regarding its nature and which is so often malignant is, without doubt, best treated by excision. The result of resection of the diseased area and gastro-jejunostomy has generally been satisfactory. Two of my patients are quite well. They have gained weight, have no gastric distress and their condition is quite satisfactory. One of them after a smooth and normal convalescence from the operation continued to lose weight. She is now gaining weight and has a good appetite and good digestion.

Resection is not always possible. In von Eiselberg's case the stomach was so bound down by adhesions and its walls so altered that a gastro-enterostomy was impossible. He performed a jejunostomy and his patient was alive and well five years afterwards. Sheldon's case was alive and well three and a half years after gastro-jejunostomy. I do not consider gastro-enterostomy to be the ideal treatment but a valuable resource in special circumstances. When practicable, in cases where the disease is localized, resection would seem to give greater promise of satisfactory and permanent results.

Eight lantern slides were shown, illustrating some fine specimens of the disease in the gross, and microscopical slides cut from the altered areas in the stomach wall. The gross specimens made quite clear the tendencies of the disease to confine itself to the submucous coat and to lessen the capacity of the organ. The microscopical slides demonstrated the action of the newly formed fibrous tissue to isolate glandular and epithelial tissue.

One would consider a good histological definition of the disease to be: A process in which there is a very dense small round-celled infiltration of the lower parts of the mucosa and the upper layers of the submucosa, having a strong tendency to the production of fibrous tissue. The cytological character of the infiltration is extremely heteromorphous. There is a tendency to terminate in scirrhus carcinoma from a constricting action upon the bases of the gastric glands.

HOUR-GLASS CONTRACTION OF THE STOMACH WITH REPORT OF THREE CASES

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MY object in reporting these three cases of hour-glass stomach is chiefly to suggest that the method of treatment must only be determined after a most careful examination of the conditions present and cannot be routine. A recent book published on the surgery of the stomach,* appears to assume that all cases of hour-glass stomach present the same problem, and the author advocates a gastro-jejunostomy in the proximal pouch or a double anastomosis, connecting the jejunum with each pouch, if pyloric stenosis exists. In malignancy this author would perform a partial gastrectomy if practicable.

In Moynihan's article in Burghard's "System of Operative Surgery" (1909), he suggests that one or more of the following operations might be needed. (1) Gastro-enterostomy, anterior or posterior. (2) Double gastro-enterostomy, a junction of the intestine being made with each sac; Weir and Foote's operation. (3) Double gastro-enterostomy in Y; Monprofit's operation. (4) Gastroplasty. (5) Gastro-gastrostomy. (6) Partial gastrectomy. (7) Stretching of the constriction, as in Loreta's operation. (8) Duodenostomy or jejunostomy.

The opinion is expressed by Moynihan that in the majority of cases gastro-enterostomy between the cardiac pouch and the jejunum will be the operation of choice. This would be an efficient method of treatment where there is only a single constriction present and where there is no pyloric stenosis. It must be admitted, however, that the procedure is not ideal because where a gastric ulcer is present (and it is the cause of the constriction in the vast majority of cases), the method advocated does not remove the diseased portion of the stomach. Clinical and pathological evidence

Read at the annual meeting of the Canadian Medical Association, St. John, N.B., July 8th, 1914.

* The Surgery of the Stomach, Herbert J. Paterson, 1913.

has accumulated of recent years to indicate that an ulcer of the stomach is frequently the seat of subsequent malignant growth and therefore the ideal operation should include radical removal of the ulcer where that is possible.

The constriction in hour-glass stomach is always of pathological origin. The view formerly held by some that it is occasionally a congenital malformation is discredited by more recent investigation. A chronic ulcer with cicatricial contraction is the most common cause, but a new growth may lead to its production. In some instances the contraction of adhesions outside the stomach may produce the constriction. Adhesions may be associated with ulcer as was the case in two of the instances which are reported in this paper.

Of the three cases here reported the following summary may be made:

The first case was a man aged sixty, with a gastric ulcer adherent to the anterior abdominal wall resulting in an hour-glass condition of the stomach, dividing that viscus into two pouches nearly equal in size. The diseased portion of the stomach was removed by partial gastrectomy and immediate anastomosis of the remaining portion of the stomach was performed.

The second case was a man aged forty-two, with a gastric ulcer firmly adherent to the head of the pancreas producing an hour-glass constriction near the pylorus. A posterior gastro-jejunostomy was performed and nothing more.

The third case was a man aged forty-three, with a gastric ulcer near the pylorus. A partial gastrectomy was performed including the diseased portion of the stomach and the pylorus. The stomach was closed by suture and the duodenum was closed in similar fashion. A posterior gastro-jejunostomy was then performed. All three cases made a most satisfactory recovery. The details of the cases are as follows:

CASE 1. J. H., aged sixty, male, complained of epigastric pain for three years. As a rule the pain came on some hours after eating, but in this respect the history was somewhat vague. Eighteen months prior to operation he had a severe attack of hæmorrhage, vomiting a large quantity of blood, and for several days subsequently blood was passed in the stools. This was the only time at which he suffered from hæmorrhage. He had not lost weight, and there was an excess of free HCl in the gastric analysis. There was a tumour situated immediately above and to the left of the umbilicus which, on examination, seemed to be incorporated in the left rectus muscle. The tumour was oval, its long axis being vertical. It

was about the size of a large lemon. X-ray pictures after a bismuth meal showed an hour-glass contraction of the stomach with a marked permanent incisura towards the cardiac end. A condition of ileo-stasis was also noted.

A diagnosis was made of gastric ulcer with cicatricial contraction producing an hour-glass stomach. It was also suggested that a chronic infection of the abdominal parietes had extended from the ulcer following in all probability a slow perforation with adhesions.

The abdomen was opened, the stomach was found adherent to the parietes and the left rectus muscle for about four inches of its extent converted into dense cicatricial tissue which cut almost like cartilage. In attempting to separate the stomach the cavity of that viscus was opened. A clamp was laid flat on the anterior surface and closed so that the adherent portion of the stomach was isolated and further leakage prevented. The stomach was separated from the parietes by removing a slice of the cicatricial tissue of the parietes along with it. A partial gastrectomy was performed between Payr's gastrectomy clamps and the affected portion of the stomach removed. An immediate anastomosis of the remaining portions of the stomach was performed.

This patient exhibited a remarkable condition of internal hernia in which the entire small intestine was contained in the hernial sac, and on opening the abdomen the only portion of the small bowel which could be seen was a portion about two inches long extending from the cæcum to the neck of the sac. The etiological factor in the production of the hernia was an aberrant middle colic artery which arose from the right common iliac and passed upwards to its destination in the transverse colon. I described the hernia *in extenso* in a paper which I read at the recent meeting of the American Medical Association at Atlantic City (June 23rd). It will be published in the *Journal of the American Medical Association*.

The patient made an excellent recovery and has remained perfectly well since the operation which took place some six months ago.

CASE 2. E. P., aged forty-three, male, admitted January 9th, 1914, complaining of pain in the epigastrium and vomiting. These symptoms had existed for ten months. The pain occurred one hour after eating; occasionally he would vomit, and this would bring relief. More recently the vomiting recurred after almost every meal. The pain became more or less constant with some aggrava-

tion on the ingestion of food. He had two hæmorrhages, one eight weeks and the other four days before admission. Blood appeared in the vomitus; it was very dark in colour and the stools also were very dark and tarry in colour, suggesting the presence of blood.

On examination he was tender on pressure in the epigastrium, most markedly so at a point slightly to the left of the middle line. The abdomen was not distended. Otherwise the physical examination revealed nothing abnormal. Stomach contents gave an acid reaction; total acidity 45; free HCl 20; combined HCl 15; microscopically no bacilli, but there were a few red cells with some debris. A chemical analysis showed a trace of blood but no bile. The blood analysis was as follows: white cells, 7,000; red cells, 3,640,000; hæmoglobin, 56 per cent. The fæces gave the guaiac test for blood. Estimation of the blood for diastase showed $1\frac{1}{2}$ times the normal quantity. The fæces contained from 20 to 40 units per cc. instead of 100 units of diastase.

An operation was performed on January 19th, 1914. After opening the abdomen and on inspecting the stomach there appeared to be a tumour about the size of a small orange near the pylorus, and the stomach at this point was the seat of an hour-glass contraction. On further examination it was found that the tumour was composed of a thickened portion of the head of the pancreas to which was firmly attached an indurated area of the posterior wall of the stomach. There were no enlarged glands along either the lesser or the greater curvature. The gall bladder was normal; the duodenum was normal; it was obvious that we had to deal with an ulcer on the posterior wall of the stomach proximal to the pylorus which had become adherent to the head of the pancreas, the latter in turn being indurated,—the whole condition producing an hour-glass constriction of the stomach. The effect of the implication of the head of the pancreas in this mass was evidenced by the increased amount of diastase found in the blood and the diminished amount in the fæces; the suggestion being that some obstruction of pancreatic ducts existed. Under these circumstances it was thought wise to perform a posterior gastro-enterostomy and this was accomplished in the usual way.

Subsequent to the operation the patient made an uninterrupted recovery and was relieved of all pain and had no further vomiting. He left for home on February 14th, 1914.

CASE 3. H. J., aged forty-two, admitted November 30th, 1913, suffering from chronic intestinal obstruction with a history that three months previously he had been operated upon by a

surgeon who removed his appendix which was retrocæcal and adherent. The wound suppurated and he was in the hospital six weeks. Since that time he has had frequent attacks of distension and vomiting and for this he sought relief. On admission the abdomen was unusually prominent and on taking deep inspirations, coils of distended small intestine were observed rising and falling behind the parietes. This was most marked below and to the left of the navel. The patient stated that he usually vomitted three or four times a week. This occurred without any reference to the ingestion of food. He also suffered from epigastric distress which usually came on about three hours after eating. The *x*-ray picture showed marked delay in the passage of intestinal contents out of the ileum. Traces of the bismuth meal were found there thirty-six hours after ingestion but there was no delay in reaching the ileocæcal valve. No abnormal condition was observed in the stomach. There was unfortunately no examination of gastric contents. A diagnosis was made of obstruction in the ileocæcal region.

At operation an incision was made to the left of the middle line. The small intestine was somewhat distended. Numerous adhesions existed about the cæcum. The ileum was slightly but definitely distended; for two feet from the ileocæcal valve its coils were adherent to one another. These adhesions were separated and all kinks relieved. There was no typical Lane's kink and no cicatricial tissue, where in the presence of such a kink it is usually found. As there had been no delay in the passage of a bismuth enema through the ileocæcal valve, the adhesions about the cæcum and ascending colon were not disturbed. We would have short-circuited in this case had we not found much more serious trouble demanding attention in the stomach. This was discovered during the usual routine examination. A gastric ulcer existed near the pylorus, which presented a dead white spot on the serous surface on the anterior wall of the stomach, two inches from the pylorus. This spot was 5 mm. in diameter and was surrounded by cicatricial tissue and marked thickening which could be felt in the gastric wall, in bulk about the size of a walnut. On picking up the stomach between the finger and thumb at this point, one could feel the prominent edges of a gastric ulcer, the bottom of which corresponded to the white spot. There were some large glands situated in the gastro-colic omentum just below the ulcer. One of these was removed for microscopic examination. A pylorotomy was done, the incision through the stomach wall lying well to the gastric

side of the ulcer. The pylorus plus the affected portion of the stomach was thus removed. The end of the duodenum was inverted as also was the end of the stomach and each secured by suture. A posterior gastro-jejunostomy was now performed.

Subsequent to the operation the patient was completely relieved of his vomiting and he has enjoyed good health since. The gland removed showed no evidence of malignancy.

In such cases the operation of gastropasty which is carried out on the same principle as Finney's operation at the pylorus, is open to the objection that the diseased portion of the stomach is not removed; further, contraction along the line of suture and recurrence of trouble are apt to occur. Precisely similar objection may be taken to the operation of gastro-gastrostomy.

In my second case removal of the diseased portion of the stomach could not well be accomplished because of the implication of the head of the pancreas, which had probably been produced by a slow perforation at the seat of ulceration with adhesion to the gland. That the head of the pancreas was markedly involved was evidenced by the increased amount of diastase in the blood and the diminished amount in the fæces, indicating a diminished flow of pancreatic juice through the ducts with increased absorption into the blood stream. One had to be content in this case with performing a posterior gastro-enterostomy.

To summarize my views regarding the treatment of the condition of hour-glass stomach, I may state that in my opinion no routine method applicable to all cases can be advocated. The different forms of treatment adopted in the above cases illustrate my point. Whatever form of operation, however, is undertaken one should endeavour to carry out the procedure so as to accomplish two main objects, first, to remove the diseased portion of the stomach (whether ulcer or new growth), and secondly, to overcome the hour-glass condition by such means as will give the best prospect of the prevention of further trouble from subsequent contraction along the line of suture.

INDUSTRIAL DISEASE AND INDUSTRIAL HYGIENE.

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INDUSTRIAL hygiene is a lamentably neglected branch of preventive medicine. Inasmuch as industrial diseases are for the most part preventible, and industrial hygiene is essentially a part of the community of hygiene, it must obviously come under the régime of the department of public health and the local board of health of every municipality. We naturally say, if these diseases are preventible, why not prevent?

The term "industrial diseases" embraces, first, the results of generally unsanitary conditions in factories, workshops, work-houses and warehouses—badly lighted, overheated, improperly ventilated, oftentimes with dust-laden atmosphere, improper heat and humidity, all of which, with the influence of fatigue, etc., tend to lower the vitality, and therefore lower the resisting powers of the body. The individual is thereby rendered an easy prey to infection, which he may be daily exposed to, consequent upon close contact with possibly a tuberculous person or one convalescing from some communicable disease or with a chronic "carrier" of some of the more common communicable diseases. Furthermore, such environments only hasten on the fatal issues of those unfortunates who are already the victims of some of the aforesaid diseases, and who through ignorance of their condition, or the danger of their environments, or through dint of circumstances, are compelled to face the inevitable. Secondly, we have the morbid state consequent upon the occupation or trade, giving rise to specific diseases, such as phosphorous poisoning, lead poisoning, arsenic and mercury poisoning, brass poisoning, poisoning by fumes of mineral and other acids, wood alcohol, silica; there are also the wood sawyers and pattern makers, furriers, upholsterers and hair pickers, garment workers, those working in compressed air, and numerous others,

whom there will not be time even to touch upon. I will therefore deal with the most important of the ones I have already referred to.

Lead poisoning constitutes the most serious in view of the fact that there are approximately one hundred and fifty trades from which lead poisoning may be contracted. It therefore comprises a very large source of industrial disease in all large cities. It will only be possible, however, at this time, to touch upon some of the more important, even of these trades.

Of the various lead industries, the occupation of painters is probably the most dangerous. This is not, however, as is usually thought, the result of exposure to the fumes of newly painted surfaces, and therefore does not affect the house painters to the same extent as those engaged in interior work, such as the painting of carriages, wagons, automobiles, etc., the greatest danger being due to the inhaling of the powdered lead produced by the rubbing down of coat after coat with sand paper, pumice stone, or emery after it is dry, in order to get a good body and a smooth finish. The work being done indoors lends a much greater degree of danger to this branch of the painting industry.

While there is an element of danger from absorption of the lead through abrasions in the hands, yet this is very slight, as is also the inhalation of vapours from freshly painted surfaces. Sir Thomas Oliver, in his talk on "Diseases of Occupation," however, cites a case of a young physician who gave all the symptoms of lead poisoning, and the only explanation of exposure was that he slept in a house all the rooms of which had been freshly painted.

In the vast majority of cases of lead poisoning the poison is taken as dust by inhalation or through the alimentary canal. Even after it is inhaled, not more than from 10 per cent. to 20 per cent. ever gets to the lungs. It is arrested in the mouth, throat, or nose, and subsequently swallowed. Then we have the white lead industry. The method of preparing white lead on this continent is much more dangerous than it is in England and Germany, inasmuch as the dry method is used here, hence the great danger from inhalation, while the moist method is used in both England and Germany. The shovelling of this dry white lead from tanks on to waggon, as done in this country, is very dangerous. It is now receiving some attention, and this element of danger is being removed.

Another dangerous industry into which lead enters, and it is a very extensive industry on this continent, is enamelled ware,

such as the enamelled baths, sinks, basins, etc. This enamel is composed of a mixture of ground glass and lead, the proportion of lead varying from 2 per cent. to 20 per cent. The mixing of this is very dangerous, and is usually done by unskilled foreigners, under the supervision of a skilled chemist. The process of applying the enamel is as follows: the bath tubs, sinks, and basins come from the sand blasting department to the slushers, whose duty it is to paint them over with a slush, or ground coat. If this is done in a separate room there is little or no danger, or if the ground coat is liquid and has only a trace of lead. After the ware has had the slush coat, it is handed over to the enameller and his assistant, who put it into a furnace until it is red hot; then it is brought out and placed on the turning table in front of the furnace doors. The assistant turns it at different angles, while the enameller dusts on the powdered glaze from a dredge. This process of heating and enamelling must be repeated several times, the ware being returned to the furnace after each coat, and then brought out again for a fresh coat. While the ware is being re-heated, the men have time to go to the window to get slightly cooled off. In doing the smaller ware the work is more continuous, but does not take so much enamel nor so much strength to handle. The putting on of the last coat is especially dangerous, as the operator has to stand as close to the article being enamelled as the heat will permit, this coat having to be put on with special care, so that there may be no uneven surfaces and no defective spots, it sometimes being necessary to dust the enamel on by hand.

Another element of danger in these factories, and probably, one of the greatest, is that the men during the work have no place to hang their street clothing and no separate place in which to keep their lunch or eat it; no facilities for washing, or opportunity for doing so, even if there were. The wives of these men, when spoken to, said that it was not unusual to find the white powder in their lunch boxes, and as the men are doing piecework, they do not feel that they can afford to go home for lunch, or even go out, as the furnaces are running constantly, and employers refuse to allow them to run empty. The men usually work steadily for six or eight hours. It is quite obvious that this work must make fearful demands on the physical endurance of the men engaged in it. They are rarely able to continue at it for more than from five to six years. Dr. Alice Hamilton, of Hull House, Chicago, who is making investigations for the United States Bureau of Labour, says she has seen these men open their lunch boxes and take out some food while

the wares were heating, and after partaking of part of it, lay down the balance on a surface covered with this lead-contaminated dust.

The hospital records in some cities for 1911 show 191 cases of lead poisoning among 1,012 employees in these industries, or 1 for every 5 men employed. That this is a conservative estimate is shown by the physical examination of 148 men who were out on strike, and who had been working up to a few days before the examinations were made; 58 out of the 148 had positive symptoms of chronic lead poisoning.

In Germany and many places in England, these wares are covered with a leadless glaze; Even in some factories in England where lead is used in the glaze, the sanitary precautions are such as to very materially eliminate the danger, there being not more than from one-tenth to one-fifteenth as many cases of lead poisoning as there are in the American industries. In England the mill hands are supplied with proper working clothes and every facility for personal cleanliness, and are compelled to avail themselves of it. They are given time for lunch, and are required to wash thoroughly before entering the lunch-room, which is the only place where they are permitted to keep or eat food. Once a month a physician examines every one for signs of lead poisoning. None of these precautions were found by the investigator to be observed on this continent.

The next most important lead trade after the enamelling is the pottery industry, which is carried on of course to a much less degree in America than in Germany and England, probably about one-fourth. Yet the number of cases of lead poisoning in the pottery industry in America is double that in Great Britain. The figures for Great Britain are 1 man out of 112 employed, and in America 1 out of every 12 or 13; and in women, 1 out of 63 employed in Europe, as against 1 out of 7 in America. Women and children are usually more susceptible to this poisoning than are men. Of the other more common lead industries that have been studied by the United States Bureau of Labour might be mentioned the storage battery manufactures, in which the oxide of lead is used, as well as the metallic, both of which contribute more or less to this disease. In America the powdered oxide is mixed into a paste with other ingredients by each individual; in England the paste is prepared and supplied already mixed, thus minimizing the danger. Then we have the white lead manufacturers, the smelting and refining of lead, typesetting and stereotyping, rubber toys and rubber balls, in which sublimed white lead is used.

When a man gets lead colic he is usually incapacitated for two or three weeks, probably costing him from \$15 to \$25 for doctoring, and \$45 for loss of wages. Statistics as regards the number of cases of lead poisoning and the number of deaths on this continent from this cause are not very valuable, inasmuch as we have no reporting of cases.

Sir Thomas Oliver, of Newcastle-on-Tyne, draws attention to the difficulty experienced at times in diagnosing these cases where none of the usual symptoms are present. Lead may be stored up in the tissues in an insoluble form, giving rise to little or no inconvenience, notwithstanding that the individual is on the brink of a precipice, over which he may be precipitated by a few grains of iodide of potassium administered for some other illness. To illustrate this, in his Gulstonian Lecture he cites a case of a maiden lady, aged seventy-two, to whom one day seven grains of iodide of potassium had been given by her medical adviser for a recently developed paralysis of the eyeball. She was found dead on her bed next day. In the post-mortem examination no lesion of the brain was found. It subsequently transpired, however, that the beautiful black hair of the lady, so much admired during her life, was the result of the frequent application of a lead dye. The paralysis was evidently the result of lead poisoning, and sudden death was due to flooding of the vascular system with lead which, stored up in the tissues, had been rendered soluble by the iodide of potassium. Another case he cited was a man aged fifty, previously a lead worker, but who had never exhibited symptoms of lead-poisoning. He was admitted to the Newcastle Royal Victoria Infirmary under the care of one of Sir Thomas' colleagues, suffering from aortic disease, which was recorded as syphilitic. At the time of admission there were none of the usual symptoms of lead-poisoning. The patient was put on potassium iodide, with the result that within a short time all the symptoms of lead poisoning developed. The patient died in a few days.

When one speaks of lead poisoning, one associates it with severe colicky pains, and the blue lines on the gums, etc., and may overlook the cases in which these symptoms are absent, but in which the patient is extremely pale, owing to blood changes produced by lead salts, together with the hardening of the arteries and the brain complications, so that even the cases of lead poisoning reported are but a fraction of the havoc that this disease is working.

Sir Thomas says that fifty years ago Sir Edmund Thorpe and himself were asked to inquire into and report upon the number of

cases of lead poisoning in the manufacturies of china and earthenware. They found that in Sheffield this lead poisoning was very prevalent and of a very severe type. However, a decided change has occurred in this respect, by which much of the danger has been overcome.

That the danger of lead poisoning can be materially minimized is well set forth in the following extract from an address to the American Public Health Association by Dr. Alice Hamilton, of Hull House, Chicago, in which she says: "We are beginning to consider lead poisoning next to tuberculosis as an industrial disease. In England and in European countries, statute regulations for the protection of working men subjected to infection from lead are proving marvellously successful. In the United States it is only within the last five years that the question has attracted any attention at all. A study of poisoning in the white and red lead industries in the United States Department of Labour, showed that in 23 factories, with a pay-roll of about 1,600 men, 388 cases of lead poisoning had occurred in a period of six months, or almost 1 in every 4 employed. As a contrast, the English Factory Inspection Report for 1910 states that there were but 5 cases among the 1,320 white and red lead workers in the district of Newcastle-upon-Tyne, or 1 for every 264 employed. In the glazing and pottery industries, there is just as great a contrast between an industry well regulated and one neglected. In Staffordshire, 1 glaze-dipper in 60 suffered from lead poisoning in the course of a year; in New Jersey and Ohio 1 in 6 or 7 has occurred; in our porcelain enamelled ware factories, employing a little over 1,000 men, 217 cases occurred in 1911, or more than 1 in every 5 employed. A report just about to be issued by the department takes up the painting industry, and shows that chronic lead poisoning affects about one-half of the painters who have followed their trade as long as ten years."

In concluding, Dr. Hamilton says: "This industrial disease is a widespread source of invalidism; of lessened earning capacity, and of shortened life among our workingmen. Other countries have shown that it can be largely eliminated by strict factory laws and regulations well enforced, and there is little doubt that as soon as it becomes generally known that we are in need of similar reforms, our legislatures will readily pass the necessary laws."

It must be apparent from the foregoing that much education is required to demonstrate the dangers both to employer and employee, and also the means by which this danger can be eliminated.

Workingmen should be informed concerning the peculiar risk they run, and be taught how to avoid unnecessary danger. Employers should be advised in regard to the most practicable devices for minimizing the danger of industrial lead poisoning, and wherever possible, this poisonous metal should be eliminated, as has been done in similar industries in Europe.

It is not sufficient, says Dr. Andrews, to inquire why workingmen do not leave such dangerous employment. The inertia which drags upon one in a position just sufficient to support a family, and the dread of being without a job under such circumstances, must be reckoned with. "I know the poison is in my system," said one young man; "I am holding this job at \$15 a week that killed my brother at the age of thirty-nine. I wouldn't stay here a week if I had anything else in sight, but what can a workingman do, having a family to take care of." The labouring man nowadays cannot throw up his position, and go and take some one else by the arm and say, "I want a new job."

Brass poisoning is not infrequent in large cities and is occasionally accompanied with lead poisoning, if the percentage of lead in the brass is fairly high. The most likely to contract brass poisoning are the brass buffers and polishers.

MERCURY POISONING. A valuable monograph was issued in 1912 by the Women's Welfare Department of the National Civic Federation. This report contains the analyses of one hundred and two cases occurring in New York State, principally in the felt hat industry. Many of the cases occurred among females, and a large majority of these were among the felt hat workers, who used both bichloride of mercury and nitrate of mercury in their work. Of the different subdivisions of the work, the makers seem to suffer most. There were also cases recorded among the makers of incandescent lights, and also chemists, and those engaged in the making of cosmetics.

Phosphorous poisoning is rare now, as its most frequent occurrence was among match manufacturers, and legislation was passed in Washington in 1912 prohibiting the use of poisonous phosphorous after June 1st, 1913, and in the Dominion of Canada in 1914.

Arsenic poisoning is much more rare since the discontinuing of the use of arsenic in the colouring of wall papers and flowers and the using of analine colours instead. This poisoning usually assumes the form of multiple neuritis. Acid fumes are another source of danger by inhalation and poisoning, and may produce bronchitis, digestive disturbances and extreme anæmia.

WOOD ALCOHOL. The fumes of wood alcohol, if inhaled in a concentrated form, are a virulent heart depressant, resulting in coma and death in a very short time; and where the subjects recover, they usually develop optic neuritis and occasionally blindness. Wood alcohol is used extensively on account of its being a cheap solvent for shellac, which when applied over a large surface in thin layers, as in the case of large beer vats, etc., becomes very dangerous.

Then we have the various trade dusts from working in marble, stone, steel and silica, and the dust produced by woodworkers, furriers, hairpickers and upholsterers. These latter frequently suffer from bronchitis and tuberculosis, and occasionally from abscess of the lungs, especially in the hairpicking industry. Among garment workers many cases of tuberculosis develop. This is due largely to long hours, dusty, badly ventilated, overcrowded rooms, in which they frequently use gas stoves, or gas flat irons and charcoal stoves. Cases of chronic gas poisoning are not unusual among these people from leaky gas stoves.

Eye-strain from improper lighting, and the deafness of boiler makers and rivetters also deserve mention.

Then we have the compressed air illness (caisson disease). I presume there is no other city in the world that has offered such an opportunity for the study of this disease as has New York. When the Brooklyn Bridge was built in 1872, a comprehensive study of this disease was made by the late Dr. Andrew H. Smith, who had charge of the caisson workers. Then there was the construction of five complete double tunnels under the East and North rivers, a large number of sky scrapers with very deep foundations, and many bridges and aqueducts. The most extensive personal experience is that contained in the Medical Report of Cornell University Medical College by Dr. Frederick L. Keyes, giving his experience in the construction of the tubes by the Pennsylvania Railroad, where among the 10,000 men employed, there were 3,692 cases of compressed air illness and 20 deaths.

The foregoing are a few of the industries in which the health and even the lives of the employees are being jeopardized. Notwithstanding that the danger of industrial diseases has been recognized for centuries, and that European nations, especially England and Germany, have been grappling with the problem for decades, yet it is only within the past few years that we on this continent have been aroused from our somnolence on this matter to a sense of our duty to our fellowmen. In this the State of Massachusetts

has led the way, though many other states have since fallen in line.

In several states commissions have been appointed whose investigations have revealed the fact that this apathy has for the most part been due to ignorance of the existing evils. The investigators were met at every turn with practically the same greeting—"we have little or none of the conditions here that they have in Europe"; but when the facts were obtained, as set forth in the figures I have already quoted from Dr. Hamilton, conditions were found to be immeasurably worse than in either England or Germany, where facts had been obtained in some instances over half a century ago, England having appointed a commission back in 1815 to look into conditions in factories. Most European countries have now excellent laws and regulations governing, and in a large measure controlling, the dangers of these industrial diseases.

In Prof. Hoffman's monograph, "The Mortality from Consumption in Dusty Trades," he points out that the general death rate in mechanical and manufacturing industries in the United States in 1900, was 13·8 per thousand, and the consumption death rate was 2·6, or 18·8 per cent. of the mortality from all causes, while the farmer population furnished a consumption rate of 1·5, or 9·5 per cent. of the mortality from all causes. It is estimated that nearly seventy thousand wage earners on this continent perish from industrial tuberculosis every year, and that with proper factory inspection, and efficient methods for the removal of trade dust, fully one-half of these could be saved. Prof. Repke says that as a result of general education and factory sanitation, the mortality in Solingen, Germany, the population of which is largely made up of employees in the cutlery industry, has been reduced from 20·63 per thousand in 1885 to 9·3 per thousand in 1910, and the consumption death rate from 540 per 100,000 in 1885, to 180 per 100,000 in 1910. Similar data are available to show that disease of the respiratory organs in one of the German cement works has been reduced from 9·3 per cent. to 3·3. per cent. after the installation of suitable apparatus for the removal of dust.

Over one-third of our population is engaged in industries from which, as we are just beginning to realize, death has been extracting a tremendous and unnecessary toll through our neglect of industrial hygiene.

To further illustrate the magnitude of this problem, and the significance of it to any nation or municipality, the following data have been obtained by Dr. John B. Andrews, secretary of the

American Association for Labour Legislation. If we consider merely the diseases due to industrial poisons, we find already prepared a carefully analyzed list of fifty-five, one of which alone (lead) is in daily use in more than one hundred and fifty trades. The first state medical inspection of factories in Illinois resulted in the removal from a single establishment of 60 workmen who had contracted lead poisoning. The Federal Bureau of Labour reports upon a white lead factory, employing only 170 men, but recording 60 cases of lead poisoning during the year. Out of 148 enamellers and mill hands especially examined by Dr. Hamilton, 36 per cent. were found to be suffering from chronic lead poisoning. The Ohio Accident Commission after careful study declared that 75 per cent. of industrial injuries reported to it by trade unions should have been classified as "occupation diseases." Careful American authorities count the industrially employed in the United States as 33,500,000, and estimate that through sickness alone the mere money loss each year is nearly three-quarters of a billion dollars. These experts further declare, on the basis of German experience, as we have no corresponding data for this continent, that one-quarter of this annual economic loss can be prevented if we secure the proper legislation, enforce the proper laws, and secure efficient inspections and examinations in connection with industrial diseases and industrial hygiene.

While many states in the Union have legislation known as the Working Man's Compensation Act, which deals only with industrial accidents, we have a similar Working Man's Compensation Act in Ontario, and I am pleased to say that a Bill has been drafted which will embrace compensation for industrial diseases, contracted while in the discharge of their duties. As Dr. Andrews expresses it, the government of the United States gives no compensation for lead poisoning, because technically it is not an accident—which is true, for under existing conditions it is a dead certainty.

The Department of Health in Toronto has just completed a thorough investigation of its various industries of which there are in all 1,294, employing 63,193. This is hardly a fair estimate of the number of employees, in view of the fact that when the investigation was made several of the manufacturers were slack and had laid off a number of their employees. The aforesaid industries do not include mercantile houses or office buildings. The conditions found may be briefly classified as follows: Good, 418; fair, 631; poor, 183; very bad, 62. The following are among the unsanitary conditions found: deficient lighting, defective and

insufficient ventilation, deficient air space, trade dust uncontrolled, fumes not properly controlled, filthy rooms, filthy lavatories, insufficient lavatory accommodation, no separate lavatory accommodation for females, no wash basins or sinks, insufficient protection for employees generally. The common roller towels and the common drinking cups were found present in a number of these industries, notwithstanding the fact that they are prohibited in the city.

The department is now framing regulations which will govern the sanitary conditions referred to, and compel the necessary installation for the control of trade dust and securing of satisfactory ventilation, etc.

The efficient solution of the safeguarding of those engaged in industrial pursuits lies in a carefully organized method of factory inspection. By factory inspection is meant the inspection of factories, industrial establishments, etc., for the protection of the health and safety and welfare of persons engaged in industrial pursuits. Such an inspection implies careful study and painstaking investigation, which requires the service of a physician well trained in public health work, as well as being in possession of special technical skill.

The inspection of factories includes the scientific study of factory and occupational hygiene, and the constant investigation of the prevalence of infectious and communicable diseases, and of the dangerous influences within and without the factory and the home, under the supervision of a board whose duty it is to study the health of the community in its broadest sense. It is our duty also to see that labour is made a physiological and not a pathological exercise.

THE CANADIAN PRACTITIONER'S DIAGNOSIS OF PULMONARY TUBERCULOSIS

BY A. F. MILLER, M.D.

Medical Superintendent, Provincial Sanatorium, Kentville, N.S.

I IMAGINE that if those in charge of the various sanatoriums on this continent for the treatment of pulmonary tuberculosis were asked what has been the most outstanding fact of their medical work, the majority of them would say, The inability of the general practitioner to diagnose incipient, moderately advanced, and often far advanced tuberculosis, and the needlessness of much of the advanced disease that comes to their institutions for treatment. I know that such has been my experience, and I shall show in the course of this paper that in Canada, at least, this has been, and is, the experience of the other men who are at present devoting their time wholly to tuberculosis institutional work.

The fact, indeed, is too often impressed upon us to be overlooked or forgotten; it is a fact which is brought afresh to our minds almost daily, and despite its recurring impact it never seems to dullen or make apathetic the sensibilities—it is too full of tragedy, too needless, to do that. It is a fact, too, which in view of the campaign that is now being waged against the disease, is thoroughly discouraging to those intimately associated in this work; a fact so outstanding, that one is almost forced to believe that it is not the indifference of the public, not the ignorance and delay of the patient in seeking advice, but the inability of practitioners to diagnose the disease in time, that is to-day the greatest clog in the forward movement to meet and cope with tuberculosis.

Many will doubt whether I am justified in using so freely and insistently this word "fact", and will be inclined to attribute the failure of the practitioner to diagnose early tuberculosis of the lungs rather to the tardiness with which patients come for consultation than to poor diagnosis on the part of the physician. Let me at once, then, give my reasons for such statements as I have made in

my opening paragraphs. I am of opinion, from my experience first as a general practitioner and then wholly in tuberculosis work, that ability to interpret correctly the various normal and pathological lung sounds can come only from coaching at tuberculosis clinics, presided over by men specially trained in diagnosing pulmonary tuberculosis. This the great majority of practitioners have not had. Although most of them visit at some time in their careers various clinics, it is a rare thing for any of them to attend tuberculosis clinics, and in view of the inadequate training in diagnosing tuberculosis that is given in most of the medical schools to-day, and the fact that but a few of the text-books, and those only in the latest editions, are of any value in setting forth modern methods of diagnosing early tuberculosis, a difficult matter at the best, it is not surprising that there should come from sanatoriums everywhere the same counsel to practitioners: You are not diagnosing this disease in the stage when it could and should be diagnosed; and until you awaken to this fact the campaign against tuberculosis must fail.

But the clearest proof of what I have said may be had in the cases that are sent to the sanatoriums for treatment. It is the rarest thing to have a full and adequate diagnosis made of any case sent in; the ordinary case, the case that presents itself almost every day, is the one where the history pointed to symptoms that long ago were brought to the notice of the physician, and that either were overlooked or dismissed as of no consequence, the typical case of the lung "as sound as a bell", which later on developed into the moderately advanced and often into the far advanced stage before a diagnosis was haltingly made.

All this unfortunately sounds like the exaggeration of one who has made a specialty of a small corner of the wide field of disease, and who sees in a distorted fashion the weeds that crop up there. I realize as well as anyone the Herculean task that confronts the student and practitioner of to-day; I know, too, that often where he suspects a beginning tuberculosis and gives advice that should prove helpful, that advice is all too seldom followed; and yet I am also forced to realize that the disease which he is called upon oftēnest to meet is the one which he is least capable of diagnosing. To confirm my opinion, if possible, and to assure myself that this state of affairs is not confined to any one portion of the country, some months ago I wrote to all those engaged in sanatorium work in Canada, submitting to them certain questions, which they, with kindness, answered. As their answers justify my title, and serve

in succinct form to place before you the work that is being done to-day in Canada in diagnosing tuberculosis, I shall present the questions and the answers given, and then draw such conclusions as may seem fair and proper.

The questions submitted were the following:

1. (a) What is your impression of the average practitioner's ability to recognize incipient tuberculosis? (b) Moderately advanced tuberculosis? (c) Far advanced tuberculosis?

2. Has it been your experience that the majority of cases of tuberculosis come to the physician when good arrest or recovery of the disease may be expected?

3. Is there any opportunity given in your sanatorium or province for students and practitioners to become familiar with the diagnosis of tuberculosis?

4. What suggestions would you offer for improving the diagnosis of tuberculosis in Canada?

Answers were received from all the sanatoriums in Canada, except one, and also from a number of prominent workers in the United States. The answers from the Canadian men I shall as quickly as possible run through, grouping together the replies to each question.

1. (a) What is your impression of the average practitioner's ability to recognize incipient tuberculosis? "Poor." "Absolutely impossible." "The average practitioner, especially those practising for some years, scarcely ever recognizes incipient tuberculosis. The hope of this recognition is with the recent graduates, and even with them it is the few that are finding the early cases." "No good." "Average doctor does not diagnose incipient tuberculosis." "Poor." "Usually fails." "Never recognized." "Does not recognize real incipient tuberculosis more than once in every ten times. Our sanatorium statistics may not bear out this impression on their face, but on closer investigation I believe it would be shown that practically all our early cases were sent by the tuberculosis dispensaries and by a very limited number of general practitioners." "We have found such difficulty in having the physicians send in cases that were at all suitable that we changed our form of application sheet, hoping that by this means the physicians would get a much better interpretation of what we meant by an incipient case." "Incipient tuberculosis is rarely recognized by the average practitioner. If it is recognized, it is more likely to be so through a summing up of symptoms rather than by physical examination, in those cases where bacilli are absent."

1. (b) Moderately advanced tuberculosis?

"Occasionally." "Fair." "Almost as difficult as incipient tuberculosis." "Sometimes." "Fair." "Frequently fails." "Much more often, but even then not as advanced, but believes it to be incipient. Perhaps he recognizes tuberculosis in the moderately advanced cases in, say, half the cases or a quarter." "Always called incipient if recognized." "Moderately advanced tuberculosis, as it is usually bilateral, is often considered to be bronchitis, when bacilli are absent; if recognized, it is generally graded by the practitioner as incipient."

1. (c) Far advanced tuberculosis?

"Often called 'incipient,' never recognized as 'advanced' unless 'hopeless.'" "Excellent." "Less difficult." "Generally, if sputum is positive." "Good." "Usually, but not always. Generally called incipient." "Occasionally fails, even when in the far advanced stage. Also I might add that when the presence of the disease is not overlooked the moderately advanced and even the far advanced cases are put down as 'incipient' sometimes; in other words, the true extent of the lesion and stage of the progress of the disease is seldom correctly recognized." "The advanced I believe he recognizes in from two-thirds to three-quarters or even nine-tenths." "Is often called incipient if it is recognized at an early visit by the practitioner."

2. Has it been your experience that the majority of cases of tuberculosis came to the physician when good arrest or recovery of the disease might have been expected?

"Yes." "To be fair and just, the usual history is that the patient was warned in time, but argued the point, and the doctor gave in to the patient's whim to wait a while and see what happens. As a rule, the patient tries to throw it on the doctor, but a careful cross-examination usually brings out, 'Yes, he told me, but he did not insist hard enough,' or something to that effect." "About 40 per cent. of the blame for late diagnosis, and late and wrong treatment can be charged to the doctor; and 60 per cent. to the patient." "Yes." "Yes." "There is not the least doubt but that a goodly number of the cases come to the doctor when there is every hope of help and permanent restoration, but whether the majority, I am not prepared to say." "At least half the advanced cases consult a physician in the early stages." "Owing to the fact that in my case records, I have not made a practice of noting with regard to the subject of this question, I would hesitate to state definitely that a majority of cases present themselves to some physi-

cian in the earlier stages of the disease. However, I certainly can recall a considerable number which had apparently been more or less under the observation of a physician at a stage of their disease when good results might have been expected if a correct diagnosis had been made, and promptly followed by proper treatment kept up for a sufficient length of time." "I do not think that the majority of cases come to the physician when good arrest and recovery may be expected." "The majority, that is over half of the number of tuberculous persons, came to their physician at a time when an arrest of the disease or a very fair recovery, if not a cure, might reasonably have been expected." "In 60 per cent. of cases the diagnosis is not promptly made; in 40 per cent. of cases the treatment is bad after the diagnosis has been made. The treatment of incipients is best, because the diagnosis has been made by keener men. In a large number of cases, especially those in middle adult life, the diagnosis in an incipient stage is difficult to make. Also a large number of cases do not present themselves for diagnosis in an incipient stage. The disease can, however, in the majority be recognized when a good result from treatment is still possible. Nearly half the responsibility for bad treatment after the diagnosis rests with the patient."

The general conclusion seems clear. In the opinion of the Canadian sanatorium physicians (and I may here state that the answers I have received from a number of the prominent men in the United States are in all respects similar to those I have presented above, and are in terms even more vigorous and unmistakable), in the opinion of these workers, the Canadian practitioner is diagnosing the commonest disease in Canada in a manner that, were it any other disease, would stamp him as careless and inefficient. There has been so much written of late on the dangers of tuberculosis, so many warnings have been uttered, that I think our physicians have come to look with a mild contempt on it all, that they do not consider tuberculosis of the lungs either a difficult disease to diagnose, or a difficult one to treat. It is the every-day experience of the sanatorium physician that they are doing neither the one nor the other properly; that they do not recognize the disease until it is well advanced, and then often fail to regulate the life of the patient intelligently enough to effect an arrest of the disease.

Why they do not, I have already hinted at. Further reasons are to be had in the answers to the question asking what opportunities are given in the various provinces for students and practitioners

to become familiar with the diagnosis of this disease, and from replies to letters sent to the different medical schools, asking what the courses offer to students in making them familiar with methods in diagnosing incipient tuberculosis. These revealed the fact, first, that only one medical college requires its students to spend a certain time in its provincial sanatorium, though in another a post-graduate course in tuberculosis has been established; so far as I can find out, and I am very willing to be corrected in this matter, clinics are given almost wholly in the hospitals where the cases are naturally not incipient but well advanced, and where the demonstrators are rarely men who have had any special training in diagnosing tuberculosis; secondly, that physicians rarely or never visit the sanatoriums either for inspection or for improving their methods of diagnosis; and thirdly, that the wealth of material at the different sanatoriums is practically never used or taken advantage of in any way for clinical or other purposes.

How present and future diagnosis can best be improved may perhaps be suggested by the answers to the fourth question. As I have but a few minutes more,—I shall give the ideas in briefest form: For students,—a chair of phthisiotherapy in our various medical schools; the use of *incipient* cases for students' clinics, the demonstrator to be a man who has had a special training in diagnosing tuberculosis; two or three weeks' residence in a sanatorium. For practising physicians,—interesting groups of practitioners to visit sanatoriums; establishing good clinics in sanatoriums and dispensaries, where practitioners can go, as they go to other clinics, to brush up their methods of diagnosis; the consistent examination of sputum, repeating this a number of times when negative; and, until diagnostic methods are improved, basing the diagnosis on a carefully taken history rather than on physical examination. For nurses,—have them before they graduate spend at least a fortnight in a sanatorium.

This, then, is the case I lay before you. These criticisms I believe to be fair and just. I can say that my own experience is very definite on the subject; and since the experience of every other sanatorium worker I know is the same, it seems very clear to me that it is a state of affairs which you, as members of the Canadian Medical Association, must consider now seriously and honestly, and endeavour, in some practical manner, to improve.

THE IMPORTANCE OF THE BALKAN WARS TO THE MEDICAL PROFESSION OF CANADA

BY COLONEL GUY CARLETON JONES

IT may seem a far cry to the Balkans, and difficult to know how the late Balkan wars can be of any importance to the medical profession of Canada. Their importance is from what we can learn, from the circumstances arising either during these wars or following them. We can learn from three points of view, as individual medical practitioners, as military medical officers, and as medical men interested in the matters of public health.

First as individuals; we see in these wars nations going to war as nations-in-arms, the whole available fighting population rushing at once, on the call to arms to fight against the common foe. To fight and to help to fight but knowing only one object, the defeat and destruction of the enemy. We learn a lesson, here, in patriotism and duty. Bulgaria lost 10 per cent. of her army, and that meant 2 per cent. of her adult population. When the nation became mobilized the medical practitioners ceased to be civil and became military. It is said that the proportion of medical men in Bulgaria to the population is only one to twenty thousand, so that if Bulgaria wished to provide a sufficient medical personnel for her army she would of necessity absorb all the medical men of the country. In Canada, with our medical population of seven thousand two hundred and eighty-five, you might say that the individual, unless he willed it, would not be affected. War would, however, affect the individual in many ways. First, in Canada he comes under the Compulsory Service Act, that is, he can be drafted into the ranks; secondly, his position during war, even if he remains as a civil practitioner, is not the same as during peace. In Bulgaria the medical schools and colleges were of necessity closed and the hospitals became the centres around which military ones arose. In Canada we would soon overtax the civil hospitals and they could not stand the extra pressure. The individual medical man may be affected also in the following way, the enemy occupying any

portion of our territory could requisition the services of any inhabitant, and the medical man would find his professional services demanded by the commanding officer who holds sway over this occupied territory. This has occurred during the late wars. The individual medical man is affected as any other individual; war means what General Sherman said when he defined the proper strategy to consist in inflicting as telling blows as possible on the enemy's army, and then causing the inhabitants so much suffering that they must long for peace and force their governors to demand it. The people must be left nothing but their eyes to weep with over the war. This condition was reached in the late wars.

Now from the point of view of a medical officer. Roughly speaking one-tenth of the medical men in Canada are medical officers in the militia, so I make no apologies for bringing a purely military side of the question forward. This aspect is well put by an Austrian observer who thus reports: "The great lesson learnt is that everything must be arranged for in time of peace, and medical officers and enlisted medical personnel properly trained and drilled for war. Hurried organization and rapid instruction after war has broken out will produce extremely unsatisfactory results. The medical institutions in the field were poorly organized, poorly equipped, and lacked the necessary personnel;" and again: "The wastage in this most recent war cannot only be imputed to the actual projectiles, which are really humane, but in large part to the want of interest which the authorities showed to medical questions in time of peace." Military administration has, once more, had forced upon its somewhat unwilling notice that gruesome fact of what happens when the proper attention has not been given, in time of peace, to the important auxiliary fighting service—the medical. The effect is not only during the war itself, but is felt for many years afterwards, for as another observer says: "This war will produce a number of victims, either those who died, or those who will remain crippled for life, and the care of, and pensions for, themselves or families will come much dearer to the state than a sufficient preparation of the medical service could possibly have cost. This war shows—by the number of wounded who died, but should have been saved had the armies been supplied with expert personnel and material, in a word, if the medical service had been given the importance which is due to it—the economy, at the very least, of such peace preparation."

This war emphasizes the danger of allowing the Red Cross societies to usurp the function in the administrative mind of the

organized medical service of an army. As soon as the war broke out nearly all the European nations offered the aid of their Red Cross societies in some capacity or other. Many detachments were sent and did good work. Their reports are interesting reading and are of great value from a purely professional point of view. But no Red Cross organization can be anything else but auxillary to the properly constituted medical service of the country at war; their official designation in the Geneva Convention, Voluntary Aid Societies, expresses this. The medical administrators of all countries recognize this, and given the proper amount of money and the proper attention would, with their very extensive knowledge at the present time, develop a medical service sufficient for all the needs of the army, relegating the Red Cross organizations to their proper sphere of action.

Now as medical men interested in matters of public health we find much to interest us. The Turks in their terrible retreat to the Tchataldja lines left a deadly weapon in the path, the infection of cholera. An advanced regiment of Bulgarian cavalry, driving back the Turks, bivouacked on their polluted ground and thus acted as a focus of disease, the infection rapidly extending throughout the Bulgarian army, and through it to the armies of the allies. In three days the Bulgarian army had 35,000 cases. Every effort was made, after the poison had been taken, not before, to stamp out the disease, and the eminent authority, Dr. Krauss, was brought by the king from Vienna. Stringent regulations were put in force, but the mischief had been done. I am unable to give the figures of the losses from cholera, but they were very heavy, especially in the second war, when the Servians lost five thousand from this disease alone. The Greek army remained free from cholera in the first war, but as soon as they were brought into contact with the Bulgarian troops in June, cases began to develop. The Greek authorities then took all precautions to prevent its spread, but in spite of these precautions it attacked the army of that country, the season was warm, the men suffered from thirst and drank the polluted water in spite of all orders to the contrary, and the country over which they were working was infected. There now occurred, what will always occur from infected armies, the infection of the civil population. The area of hostilities is infected and thus the civil population suffers the same as the military. But the effects are more extensive than this local infection, the sick and the convalescent are the carriers of the disease, and where they go there also goes the infection. The trail of infected armies leaves

a sad tale of sickness amongst the women and children and non-combatants. Laws and regulations may govern the conduct of war, but disease and infections recognize no such laws and refuse to signal out the combatant only. Thus the cholera spread back beyond Adrianople and from there to the very homes of the allies. The Greeks recognized this danger when their troops were to return in September to their homes. As Konstantin Montonses reports, there was naturally danger of their carrying the infection to the home territory. Temporary isolation of the troops would have been futile, as the cholera vibrio retains its virulence sixty days. Repeated examinations of the faeces were out of the question with the limited facilities. It was decided to establish large examination institutes in the principle home garrisons, where all the necessary measures should be taken on the first appearance of cholera. Fortunately the prolonged peace parleys necessitated the detention of many of the troops till November, a circumstance that proved favourable for the civil population of Greece.

Thus we see that war forces itself on the civilian, on the innocent child, on the non-combatant who stays at home, not only primarily but secondarily, for who can tell, or count up, or even recognize the victims of war when it once places its hand on a country? Can we limit the victims of the South African war to those who went to that country? No! Disease, no doubt, was brought home by many a convalescent and served as a nucleus for an outbreak which affected the harmless non-combatants. And it is right that all medical men should realize the importance of the lesson of this apparently far-removed war, for might not some of these men carrying disease come to Canada as immigrants?

AN important meeting of the Port Hope Board of Health was held July 16th, when the water supply formed the subject of discussion. Dr. Dickinson, the medical officer of health, stated that thirty tests of the water had been made recently by the provincial board, and that in nineteen cases the water was found to be polluted. A resolution was passed requesting the board of water commissioners to take the necessary steps, in accordance with the public health act, to furnish a sufficient supply of pure water for the requirements of the citizens.

Editorial

THE WAR

IT is a bitter commentary on our civilization that out of a clear sky such a storm of irrational havoc should suddenly burst on the world. One nation recklessly undertakes to chastise a small but irritating neighbour, and in less than a week all the great nations of Europe are involved in such a war as the world has never seen and, for the credit of humanity be it hoped, never may see again. What a great statesman not long ago described as unthinkable has become a reality, the full horror of which cannot yet be realized. Still, it is perhaps only the inevitable result of the policy of blood and iron by which the German states were welded together, and which has imposed upon Europe an increasingly wasteful burden of armaments. This, however, is not the place to discuss the political motives of the protagonists. It is enough for us that the Empire which is our heritage, is involved in a struggle for self-preservation, and on the side of the weak against the strong, of international justice against brutalizing militarism. Meanwhile the first great victory has been won by the British fleet. Within a week of the outbreak of hostilities, the safety of the paths of the sea, upon which the existence of the Empire depends, was practically assured. If only all the victories of this war could be so swift, so decisive, and so bloodless!

The vast numbers of the opposing armies and the deadly efficiency of the modern engines of destruction make it certain that the sacrifice of life and limb will be appalling. But with the progress of preventive medicine the military medical services have acquired a vastly increased importance, and it is reasonable to expect that disease, which in the past has been

a more deadly enemy to the soldier than the bullet, will now play a minor rôle. Typhoid, particularly, should be prevented from repeating the ravages it made in South Africa and in the Spanish American War, in both of which campaigns it claimed by far the larger share of victims.

In England factional strife is forgotten, and the crisis has been met in an admirable spirit and with a grim realization of the magnitude of the task which has to be performed. Canadians, too, are all of one heart and mind, anxious to do all that they can, and ready to make whatever sacrifices the fortune of war may demand. And it is a matter of congratulation that our profession is perhaps better prepared for the emergency than any other class in the community. In the first Canadian Division, numbering over twenty thousand men, which is now being mobilized at Valcartier, will be included fifty medical officers and over seven hundred non-commissioned officers and men, constituting the medical corps. There has been no difficulty in recruiting the field ambulances up to war strength, and in filling the ranks with a fine class of men, and divisional headquarters in the larger cities have been flooded with offers for service from both doctors and nurses. Many of the medical men who are anxious to serve have, like other citizens of Canada, neglected all opportunities of training for the defence of the Empire. Nor is this surprising under the circumstances. For a hundred years war has been more or less remote, it has not literally been brought home to us. There is, however, no lack of trained men. When one learns that the medical personnel of the militia is almost up to peace establishment, and that there are over seven hundred officers—one in ten of the physicians of the country—ready for service, the profession as a whole cannot be accused of having shirked its obligations.

The duties of the medical officer nowadays are much more varied than those of the army surgeon of the past, and to be efficiently performed demand special military training. The nature of these duties is admirably described

in the timely paper on The Medical Profession and the Militia which Lt.-Col. Grant presented at the recent annual meeting, and which is published in this issue. In addition to outlining the medical work in the annual training camps, Col. Grant gives a lucid account of the organization of the Army Medical Corps, and of its work on active service. The main problem of the medical officers on the field of battle is the transportation of the wounded, and the organization is designed to allow of the maximum degree of mobility of the fighting forces consistent with the efficient treatment of the wounded.

The Japanese Army taught the lesson that an effective medical service can compensate to a considerable extent for the disadvantages of inferior numbers. Since that time means have been perfected which promise almost certain protection against the worst scourge of armies. In the hurry of mobilization the protective inoculation of our troops against typhoid has not been neglected. One could wish that the order had been made compulsory, both with us and in the British Army, but it does not appear that any of our recruits are refusing the treatment. The vaccine is prepared in the Ontario Board of Health's laboratories, and, for the sake of uniformity in the statistics, preparations from other sources are not being used. There are, however, other dangers not so well guarded against as typhoid. Experience has shown that the occidental soldier, in contrast to the Japanese, cannot be trusted not to drink polluted water, and the menace of dysentery and of cholera must still be met without the aid of prophylactics.

It would be idle to speculate on the duration of the war and its probable outcome. We are fighting, not without confidence, against the most efficient military organization in the world. Unfortunately it is not possible to crush this organization without fighting the German people, with whom, as such, we have no quarrel, and for whom all men of science, and particularly physicians, must have a great respect, not

unmixed, in those of us who have sojourned amongst them to our profit, with grateful admiration. Be that as it may, our present duty is plain; and so long as the Empire has need of our aid, we in Canada will continue to give willingly of our best.

THE ASSOCIATION

IN another place in this issue will be found two of the reports which were presented to the Executive Council at the recent meeting, together with some of the more important deliberations of the Council and of the Public Health Section, important, that is, in the sense of being of general interest. From the Finance Committee's report it is evident that progress is being made in the organization of the profession. All of the provincial associations are manifesting an active interest in affiliation, not only in their affiliation with the national Association, but also in the establishment of district and county societies and the affiliation of these latter with the provincial bodies. Correspondence has been carried on between the Association and the provincial secretaries with the object of evolving as uniform a scheme of organization as the varying constitutions of the provincial associations will permit. The importance of having numerous local medical societies throughout the country, all closely affiliated with the larger associations, cannot be too strongly emphasized. They are the units of which alone a strong and efficient national organization can be composed. The membership of the Association numbers at present about one thousand five hundred. There was a net gain of over sixty during the year. The treasurer's statement for the calendar year 1913 shows that the finances of the Association are in a satisfactory condition. Compared with the previous year the receipts increased about 25 per cent. and very nearly balanced the disbursements. The deficit is a small one, and there is every prospect of its being converted into a surplus in the

future, as by the terms of the agreement with the publishers, the association begins this year to share in the annual profits of the JOURNAL.

Important recommendations are made by Dr. Revell in his report on behalf of a committee which was named at the London meeting on a proposal to bring about uniformity in the Public Health Acts of the various provinces. The committee suggests that the task, which promises to be a long and difficult one, should be divided between this Association and the Canadian Public Health Association. It is pointed out that there are two distinct sets of provincial statutes, the Medical Acts, dealing with matters of education and administration, and the Public Health Acts, which have to do with the practical side of preventive medicine. It is proposed, therefore, that the correlation of these latter Acts should be undertaken by a committee of the Public Health Association, with the active assistance of the Public Health Section of the Canadian Medical Association; while the revision of the Medical Acts comes more properly within the scope of our Association's Standing Committee on Medical Education. The suggestion is made that a model Medical Act might be drawn up, which could be submitted to the various medical societies for criticism and approval. Its adoption could then be urged upon all the provincial legislatures. The importance of uniformity in the regulations governing the practice of medicine need not be dwelt upon. Besides being a logical sequence and fitting complement to the Canada Medical Act, it would strengthen the organization of the profession, and provide the most effective means for concerted action, which is increasingly needed, against the impudent pretensions of osteopaths, chiropractics, Mary-Baker-G.-Eddiots, and that ilk.

THE MEDICAL JOURNAL OF AUSTRALIA

THE first number of the *Medical Journal of Australia*, issued on July 4th, is a credit to the profession of the Commonwealth. It is the official organ of the four state medical societies, which are all branches of the British Medical Association, and which have hitherto been represented by two organs, the *Australian Medical Journal* and the *Australasian Medical Gazette*. Both of these periodicals have had long and useful careers, having been published continuously, the one for fifty-eight, the other for thirty-three years, at first monthly, but of late years weekly. They now give place to the new journal with which they are incorporated, and which consequently has a clear field, there being apparently no other medical periodicals published on the continent. Doubtless the president of the Victorian Branch voices the general opinion when, in a letter to the editor, he writes: "The first issue of the new journal is an occurrence of greater importance than anything that has happened in the history of the medical profession in Australia, not even excepting the foundation of the Australasian Medical Congress, since the new journal symbolizes the intimate union of all the Branches of the British Medical Association in Australia, and it will continue every week to indicate and advocate the common aims, interests, and ideals of the profession."

The *Medical Journal of Australia* is published in Sydney and is edited by Mr. H. W. Armit, who was brought from London to undertake the work. Mr. Armit's qualifications are not only literary. His ability as an organizer was in evidence at the last International Congress, at which the arrangements for the scientific exhibits were under his charge. The new journal in appearance and in the arrangement of its contents somewhat resembles the *British Medical*, the journal of the parent organization, though naturally on a smaller scale. The first issue comprises twenty-four closely printed pages, and gives evidence of careful and efficient editing.

Aside from the articles of scientific interest, one on the history of medical journalism in Australia particularly challenges our attention. From it we learn that there have been ten journals started since 1846, when the first was founded. Of these only one, in addition to the two mentioned above, had a longer existence than three years. There had never been more than four in circulation at the same time. If we compare this with the situation here, the comparison is not all to our advantage. Including the four published in the French language, we have in Canada at the present time no fewer than fourteen medical journals, none of which are issued oftener than monthly. It is natural, of course, that the weekly journals of the better class published in the United States and in England should be widely read in Canada. But it is not too early for the profession of this country to have a strong weekly journal of their own, and the achievement of the constituent branches of the British Medical Association in Australia is one which our Association before long should be in a position to emulate. Meanwhile we wish the *Medical Journal of Australia* long life and prosperity.

INTERESTING statistical information on the prevalence of syphilis and gonorrhœa in the United Kingdom was presented by Dr. Douglas White at the twenty-sixth meeting of the Royal Commission on Venereal Diseases. Dr. White had arrived at the conclusion that there were every year 122,500 fresh cases in London alone and 800,000 in the United Kingdom. He computed that of this latter number 114,000 would be cases of syphilis, the remaining 686,000 gonorrhœa and chancroid. From these figures he deduced that there must be about 3,000,000 syphilitics in the United Kingdom. The deaths from general paresis number about 2,600 annually, and those from locomotor ataxia about 700. If it be assumed that 3 per cent. of cases of syphilis result in death from these diseases, the conclusion is reached that there are about 110,000 syphilitic infections annually.

THE eighty-second annual meeting of the British Medical Association was held in Aberdeen, beginning on July 28th. In the preliminary administrative sessions the most important subject discussed was the establishment of a special fund for the defence of professional interests. The proposal kindled a lively controversy, more as to the administration of such a fund than as to its immediate advisability. The fund might have to be used in a manner which could be construed as being "in restraint of trade", and this would be beyond the legal powers of the Association as such. The advocates of a sort of trade union argued that only by such an organization could the fullest legal protection be secured to the funds. In the end it was decided that the fund should be in the hands of a trust association, or other organization not of the nature of a registered trade union. One session was devoted to matters connected with National Insurance. The question was raised whether any part of the payment to sanitariums for tuberculosis should go to the medical staff. The honorary staffs of these hospitals do not wish to accept payment, which would presumably lead to government control of the voluntary hospitals. The reply to this argument was an appeal to the policy definitely laid down by the Association that medical men should not give gratuitous service to those who are assisted by the state. The Insurance Committee's recommendation in favour of payment was adopted. With respect to the salaries of women medical inspectors of reformatories and industrial schools, a resolution was carried with acclamation that the salaries paid to medical women be the same as those paid to men. The association will meet next year in Cambridge under the presidency of Sir Clifford Allbutt.

THE *British Medical Journal* of August 8th gives some interesting particulars of the medical preparations for active service. The Royal Naval Volunteer Reserve had all been called up. This reserve consists of civilian practitioners

who have been trained to the special work of a naval surgeon in time of peace. At this date they were on duty and many of them already at sea. Large numbers of practitioners holding commissions in the Territorial Force had joined their units and were under military orders. In several places meetings of the profession had been held at which those remaining behind loyally undertook to safeguard the interests of those who were called to leave their practices, and offered to undertake any medical duties for the sole benefit of the absentees. In some places, Southampton for instance, as many as one-half of the doctors in active practice were liable for military or naval service and it was probable that some of the country districts would be practically denuded of doctors. Provision had to be made for the treatment of insured persons on the lists of panel doctors who have been called to the colours. Many offers for service from senior students for employment as dressers were coming in. Some had already been accepted and were on duty with the ships. It was proposed that the time spent by these dressers should be reckoned as part of their clinical training. The Admiralty and the War Office had both issued notices that they were prepared to enlist civilian surgeons to engage for twelve months or until their services were no longer required. The response to these announcements had been immediate and had promised to prove ample for present needs. The British Medical Association had notified the government that it was prepared to put the machinery of its organization at the government's disposal.

The medical organization of the Territorial Force consists of fifty-six field ambulances and, in addition, the medical officers of the Sanitary Service are available for military duty. The Territorial Force has also twenty-three general hospitals throughout the country and a medical staff for the organization of clearing hospitals.

THE magnificent new building of the School of Physiology, which has been presented to the University of Cambridge by the Drapers' Company of the City of London, was opened by His Royal Highness Prince Arthur of Connaught on June 9th, last. The building stands between the department of experimental psychology and the department of geology and is five storeys high. So far as is known, the first experimental laboratory was equipped in Cambridge in the fifteenth century, and there it was that early in the eighteenth century Stephen Hales first measured the blood pressure and began his important experiments in animal and plant physiology. The first attempt to establish a physiological laboratory was made in 1870, when Sir Michael Foster commenced his connexion with Cambridge. With other important benefactions which have been received, the gift of the Drapers' Company will assist largely in the completion of a scheme for housing in a thoroughly efficient manner the departments of physiology, bio-chemistry, and experimental psychology.

Two cases occurred recently in Australia—one in Sydney, the other in Melbourne—in which the question as to sanity came up for decision. In the case in Sydney the medical opinion was almost equally divided, six taking the one view and seven being of the opposite opinion. The Melbourne case was that of a man of eighty who had been operated upon for cataract and who subsequently showed mental symptoms. He was removed to an asylum and died from septicæmia, which was said to be due to injuries caused by being strapped down while in hospital. As the *Australasian Medical Gazette* remarks, it is regrettable that such cases do occur, but imperfect knowledge of all the facts of a case must result in difference of opinion and it is impossible for a number of medical men to arrive at a true diagnosis as to the sanity of an individual unless they are acquainted with the case in all its details; moreover, a physician should not be expected to

certify to the sanity or otherwise of a patient unless he possesses a knowledge of mental conditions.

A FURTHER donation of \$2,550,000 has been made by Mr. John D. Rockefeller to the Rockefeller Institute for Medical Research. The money will be expended upon the purchase of additional land in New York, on the erection and equipment of additional laboratories, and to ensure the proper maintenance and conduct of the extended work. A special fund has also been provided by Mr. Rockefeller for the establishment of a department of animal pathology, of which Dr. Theobald Smith, professor of comparative pathology at the Harvard Medical School, is to be director. Included in the Institute now are departments of pathology, bacteriology, protozoology, biological chemistry, physiology and pharmacology, experimental biology, and animal pathology, and connected with the Institute is a hospital for the treatment of patients afflicted with diseases under investigation; there is also a separate building, with isolated rooms, for the study of contagious diseases. Much has been accomplished already by research work done at the Rockefeller Institute: for instance, the discovery of the serum treatment of epidemic meningitis, the discovery of the cause and mode of infection of infantile paralysis, the surgery of the blood vessels, the method of administering anæsthetics by intratracheal insufflation, the skin reaction for syphilis, and the cultivation of the parasite of rabies. The Institute is the most amply endowed institution for medical research in the world and one may look forward with no misgiving to many important discoveries in the future.

Book Reviews

ABDOMINAL SURGERY: CLINICAL LECTURES FOR STUDENTS AND PHYSICIANS. By PROFESSOR THORKILD ROVSING. Edited by PAUL MONROE PILCHER, A.M., M.D. Philadelphia and London: J. B. Lippincott Company. Canadian Agent: Charles Roberts, Montreal, 1914.

Clinical lectures are a much more personal affair than a textbook or treatise. Their interest and value depend upon the personality of the speaker, as the spoken is more intimate than the written sign. The mark of these lectures is their simplicity, that kind of simplicity which is observed in the writings of the Fathers; and the clinics are arranged to produce a proper dramatic effect. Most clinics smell of the lamp. These give one the impression of having been present at an interesting performance. And yet Professor Rovsing does not hesitate to deal in an informal, and almost casual way with some of the deepest problems of surgery. With rare dialectical skill, he introduces a consideration of principles into the discussion of a case, but his rapid judgments must not always be taken as infallible. The relative merits of chloroform and ether will serve as an example. It is not from obstinacy and stupid adherence to tradition that many Parisian and American surgeons prefer chloroform. It is because knowing how to administer it, they go safely. Many surgeons have seen Professor Rovsing at work. Those who are unfamiliar with his methods of operating and teaching should make haste to procure this book. It will be read with pleasure and profit. For the translation we have nothing but praise.

THE PRACTICE OF MEDICINE. By FREDERICK TAYLOR, M.D., F.R.C.P. Tenth edition. Toronto: The Macmillan Company of Canada, Limited, 1914.

It has been the privilege of the present writer to call attention to the ten successive editions of Taylor's "Practice of Medicine" which have appeared since the year 1890. The first edition was described as a short, yet complete account of the present state of medical practice, and every succeeding edition performed that

function for the time being. In those earlier days the little book was much beloved of students. The work has grown to one of nearly 1,200 pages, but its essential excellence remains in the attention which it gives to the description of symptoms, to diagnosis, to prognosis, and to treatment. He would be a complete student who informed himself of all that is contained in this book.

CLINICAL HEMATOLOGY: AN INTRODUCTION TO THE CLINICAL STUDY OF THE SO-CALLED BLOOD DISEASES AND OF ALLIED DISORDERS. By GORDON R. WARD, M.D., Fellow of the Royal Society of Medicine, Medical Society of London, etc. Octavo of 394 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3.50 net. Sole Canadian Agents: The J. F. Hartz Co., Ltd., Toronto.

This book is concerned with a clinical study of the blood diseases and with the classification of them. This classification is not free from difficulty, as most of the conditions designated as blood diseases are in reality diseases of the blood-forming organs. The changes in the blood-forming organs are not necessarily reflected in the blood. Of this, Hodgkin's disease, at least in its earliest stages, will serve as an example. Again, in hæmophilia it is all but impossible to demonstrate any alteration in the blood. The classification into primary and secondary affections does not help us much, as in many cases it is impossible to establish a distinction. The author has taken all these difficulties into consideration, and he has arranged a classification which is as little arbitrary as possible. But in view of Professor Gruner's recent studies it is probable that a fresh consideration must be given to many conditions which are now considered to be well understood. At the moment the study of blood disease is occupying the attention of the best minds in the profession, and Dr. Ward's book, if not final, is a valuable contribution. It is quite new and gives an adequate impression of the present knowledge of the subject, especially in its clinical aspects.

AURICULAR FLUTTER. By W. T. RITCHIE, M.D., F.R.C.P.E., F.R.S.E. Price 10s. 6d. Edinburgh & London: W. Greene & Son, 1914.

Disease of the auricles is a well recognized division of affections of the heart, and it forms the subject matter of this book. A preliminary account is given of the anatomy and physiology of the heart, and the disturbance of cardiac action is considered in due

course. The way is then cleared for a discussion of that condition of extreme acceleration of the auricles which is known as auricular flutter. The diagnosis of the condition from other parallel ones is made quite clear. The illustrations are all original and have been drawn from cases that came under the author's observation. The monograph is an admirable study in the strictest scientific method of a condition which has hitherto been veiled in much obscurity. Nothing could exceed the clearness or beauty of the tracings. They are quite convincing.

RADIUM AND RADIOTHERAPY. RADIUM, THORIUM AND OTHER RADIO-ACTIVE ELEMENTS IN MEDICINE AND SURGERY. By WILLIAM S. NEWCOMET, M.D., Professor of Roentgenology and Radiology, Temple University, Medical Department; Physician to the American Oncologic Hospital; Fellow of the College of Physicians, Philadelphia. 12mo, 315 pages, with 71 illustrations and 1 plate. Cloth, \$2.25 net. Lea & Febiger, publishers, Philadelphia and New York, 1914.

Dr. Newcomet complains that most of the radium brought to America is in the hands of private speculators who demand an exorbitant price and supply a poor quality. This difficulty of access to the material is not wholly a disadvantage. It has been of some assistance in confining the experiments within reasonable bounds. As it is, results have been published with imperfect data, and hopes have been raised which were doomed to disappointment. Time alone will relegate this substance to its proper place in the armoury against disease. The historical account of the discovery of radium is quite full, and the section which deals with the chemistry and physics of the radio-active elements conveys all necessary information. One gains the impression from a careful reading of the book that Dr. Newcomet is more profoundly impressed by the advantages of radio-activity in the treatment of disease than the most recent and specific results would warrant.

PRACTICAL THERAPEUTICS. By DANIEL M. HOYT, M.D. Second edition, revised and rewritten. Price \$5.00. St. Louis: The C. V. Mosby Company, 1914.

The features in this book which call for special attention are, the readiness with which the reader can find the name of the drug, its physiological action, and in many cases its action on different

organs. Then follows toxicology, and the therapeutic indications, and contra-indications. There is a description of all the new and non-official drugs, and of most proprietary remedies. This is the claim put forth by the publisher, and by every test which we have been able to apply it is none too large. Hoyt's "Practical Therapeutics" will continue in this edition, as in the previous one, to be an admirable compendium of the subject with which it deals, and offering ready access to information which is desired. It is at once a text-book and an encyclopædia.

RENAL DIAGNOSIS IN MEDICINE AND SURGERY. BEING A HANDBOOK OF THE THEORY AND PRACTICE OF FUNCTIONAL TESTING OF THE KIDNEY. By DR. VICTOR BLUM. English translation by W. B. CHRISTOPHERSON. London: John Bale, Sons, and Danielsson, Limited, 1914.

The development of renal surgery has called for refined methods for diagnosing diseases of the kidney. These methods have been developed and are now accessible to all surgeons, but they have been seized upon by the internists as well, and are now the basis of treatment of renal diseases by other than operative measures. The present volume gives a complete summary of this work, and will serve as an introduction into this new province of functional diagnosis. The bibliography is especially useful, and nothing of importance appears to have escaped the author.

MENTAL DEFICIENCY (AMENTIA). By F. A. TREDGOLD, L.R.C.P., M.R.C.S. Second edition, revised and enlarged. Toronto: The Macmillan Company of Canada, Limited, 1914.

When Dr. Tredgold's book was published some six years ago, it created nothing less than a sensation, as it disclosed the large extent to which mental deficiency affected all peoples. Since that time the subject has been one of increasing interest to persons interested in social and philanthropic questions. At the moment legislatures are face to face with the problem, and it would appear that it can no longer be neglected. The appearance of a second edition of the book is, therefore, especially timely, and it will increase the interest in the subject which was aroused by the publication of the earlier work. Dr. Tredgold has been in close association with the feeble-minded during the whole course of his professional career. He has observed accurately and the conclusions which he has drawn seem to be inevitable. His book dis-

closes the fact that there is a vast number of persons outside the category of the insane who are feeble-minded and require attention on the part of their relatives or on the part of the State. Unless this is given they quickly pass into the pauper and insane class, and occasionally develop criminal proclivities. The book is worthy of a most careful study as it sets forth in convincing language the avenues by which the problem must be approached. It is more than a text-book of medicine, it is a work of philanthropy.

DEFENSIVE FERMENTS OF THE ANIMAL ORGANISM AGAINST SUBSTANCES OUT OF HARMONY WITH THE BODY, THE BLOOD-PLASMA AND THE CELLS; THEIR DEMONSTRATION, AND THEIR DIAGNOSTIC SIGNIFICANCE FOR TESTING THE FUNCTIONS OF DIFFERENT ORGANS. By PROFESSOR EMIL ABDERHALDEN. English translation by J. O. GAVRONSKY, L.R.C.P., M.R.C.S., M.D., and W. F. LANCHESTER, M.A. London: John Bale, Sons, and Danielsson, Limited, 1914.

The superscription of this book indicates clearly the place it is intended to occupy in medical literature. The first edition was published in 1912, the second the following year, and the third some months later. The translation is done by Dr. Gavronsky and Dr. Lanchester, and is a faithful rendering of the text. It will be recalled that it was Abderhalden who suggested the possibility of diagnosing the condition of pregnancy by the use of a serum. The hint there given has been followed up, and there are now few divisions of medicine in which the application of this method has not been attempted. The whole subject is extremely interesting and this book presents a record of the case as it now stands.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A TREATISE ON CLINICAL MEDICINE. By WILLIAM HANNA THOMSON, M.D., LL.D. Octavo of 667 pages. Price, cloth, \$5.00; half morocco \$6.50. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

THE PRACTICE OF SURGERY. By JAMES G. MUMFORD, M.D. Second edition. Octavo of 1032 pages with 683 illustrations. Price, cloth, \$7.00; half morocco, \$8.50. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

COLLECTED PAPERS BY THE STAFF OF ST. MARY'S HOSPITAL (MAYO CLINIC) FOR 1913. Octavo of 819 pages with 335 illustrations. Price, cloth, \$5.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited.

SEROLOGY OF NERVOUS AND MENTAL DISEASES. By D. M. KAPLAN, M.D. Octavo of 346 pages, illustrated. Price, cloth, \$3.50 net. Philadelphia and London: W. B. Saunders Company, 1914, Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

MODERN SURGERY: GENERAL AND OPERATIVE. By J. CHALMERS DAcOSTA, M.D. Seventh edition, revised, enlarged, and reset. Octavo of 1515 pages, with 1085 illustrations. Price, cloth, \$6.00 net; half morocco, \$7.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited.

INTERNATIONAL CLINICS. EDITED BY HENRY W. CATTELL, A.M., M.D., and others. Volume II. Twenty-fourth series, 1914. Philadelphia and London: J. B. Lippincott Company. Canadian Agent: Charles Roberts, Montreal.

APPENDICITIS: A PLEA FOR IMMEDIATE OPERATION. By EDMUND OWEN, F.R.C.S., D.Sc., Bristol: John Wright & Sons, Limited. Toronto: The Macmillan Company of Canada, Limited, 1914.

A HANDBOOK OF PSYCHOLOGY AND MENTAL DISEASE. By C. B. BURR, M.D. Fourth edition, revised and enlarged; with illustrations. Price \$1.50 net. Philadelphia: F. S. Davis Company, 1914.

EXTRACTION OF TEETH. By F. COLEMAN, L.R.C.P., M.R.C.S., L.D.S. Second edition; illustrated. Price 3s. 6d. net. London: H. K. Lewis, 1914.

PRACTICAL THERAPEUTICS. By DANIEL M. HOYT, M.D. Second edition, revised and rewritten. Price \$5.00. St. Louis: The C. V. Mosby Company, 1914.

A MANUAL OF SURGICAL ANATOMY. By CHARLES R. WHITTAKER, F.R.C.S., F.R.S.E. Second edition, revised and enlarged. Price 6s net. Edinburgh: E. & S. Livingstone, 1914.

FORMULAIRE DES SPECIALITES PHARMACEUTIQUES POUR 1914. By DR. VICTOR GARDETTE. Price 3 francs. Paris: Librairie J. B. Baillière et fils, 1914.

NOTIONS PRATIQUES D'ELECTROTHERAPIE APPLIQUEE A L'UROLOGIE. By DR. DENIS COURTADE. Publication of the Clinique des Maladies des Voies Urinaires de Necker, Paris. Paris: F. Gittler, 1914.

PHYSIOLOGIE NORMALE ET PATHOLOGIE DES REINS. By L. AMBARD, chief of chemical laboratory of the Necker Hospital. Paris: F. Gittler, 1914.

MANUAL DE CYSTOSCOPIE. By E. PAPIN, chief of Clinique des Voies Urinaires à l'hôpital Necker, Paris. Paris: F. Gittler, 1914.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

HEALING, WITH GOOD FUNCTION, OF AN ALMOST COMPLETELY SEVERED HAND. From the Surgical Clinic of Tübingen University. *Muenchener Medizinische Wochenschrift*, No. 26, 1914.

THE hope of successfully reuniting members or parts of members that have been severed from the body has always been present among surgeons. Again and again have attempts in this direction been made with almost invariable failure. One may say that, to date, apart from very small pieces of tissues such as the tip of the nose or finger, the union of severed members of the human body has in no case been successful. Even in animal experimentation Carrel and Lexer have achieved only partial success in this direction. The stumbling block has always been the difficulty of supplying the tissues with sufficient blood. Certain tissues cannot live with a temporary absence of blood or with a diminished blood supply for any considerable period. Examples of such are the muscles, large skin areas, and nerves. But, previous experience notwithstanding, there was recently treated in the Tübingen clinic a case where the right hand of a ten year old boy was completely severed except for a small bridge of tissue; yet the hand was saved and function reestablished. The hand was severed by one of the knives of a food-cutting machine so completely that it hung from the forearm by a small piece of tissue about 3 cm. broad on the ulnar side. The local doctor approximated the wound surfaces, splinted the parts, and sent the boy to Tübingen where he arrived six hours after the accident. At first sight it seemed a case where amputation was the only possible procedure. The cut had not only opened the radio-carpal joint, but had gone completely through the lower ends of radius and ulna. The hand was blue and cold but, on careful examination, a warmer area was noticed on the ulnar side and here, especially in the little finger, there was sensation, which was elsewhere totally absent. On close inspection of the wound it was found that the connecting bridge of tissue contained the uninjured ulnar artery and nerve, the tendon of the flexor carpi ulnaris, and

the partially severed extensor carpi ulnaris tendon. These four structures, together with a piece of skin about 3 cm. broad, constituted the only connexion between arm and hand. The ulnar vein could not be located. It was decided to try to save the hand in spite of the danger of infection after six hours delay. The bones and the twenty-two severed tendons were united and the median nerve sutured. It was unnecessary to suture the radial artery, as after the removal of the blood clot, blood spurted from the distal end, showing that the integrity of the palmar arch was preserved. The radial nerve was not sutured and the wound closed without drainage. Healing occurred by first intention with the exception of a small fistula on the radial aspect which discharged three sutures and then closed. There was considerable œdema of the hand until the end of the third week. Active and passive movements were begun as early as the eleventh day and were remarkably free. Sensation did not return to those parts supplied by the median nerve until the sixth month, at which time circulation was normal except in thumb and index finger which were at times blue and cold. Movement at the wrist joint was free. The patient could use the hand for eating, drinking, writing, and light work eight months after the accident.

CUTANEOUS AND CONJUNCTIVAL PREGNANCY TESTS. By DE JONG, of Lyden. *Muenchener Medizinische Wochenschrift*, No. 27, 1914.

Since reading the communication of Englehorn and Wintz regarding a new skin reaction for pregnancy the author considers his own experiments might be of interest. He is convinced that the Abderhalden albumen-splitting reaction can have only a limited application. The author's experiments were upon pregnant and non-pregnant cows and the antigen was prepared by separating the foetal from the maternal portion of the placenta the former being cut unto fine pieces and dried upon a plate by means of a stream of hot air, after which it was ground up by mortar and pestle. Muscle tissue was prepared in the same manner to be used as a control. A 10 per cent. suspension in distilled water was then made from each and 1-10 cc. injected into each gluteal fold, the placental suspension on the right and the muscle suspension on the left side. Twenty-two animals were injected, ten pregnant and eleven non-pregnant cows and one ox. All the reactionary swellings noticed occurred from three to five hours after the injection and

later rapidly disappeared, so that in this respect there is no resemblance to the tuberculin reaction. In only eleven cases did the reactions correspond to the animal's condition, showing that the test had no practical significance. Later, the same antigen was used and instilled into the conjunctival sac, the placental suspension into the right eye, the muscle preparation into the left. The reaction consisted of reddening of the eye and inflammatory exudation from the conjunctiva; but again the reactions were not reliable. Other antigens were prepared but with equally disappointing results. It is known that the local immunity reaction in the larger domestic animals, especially the horse and cow, are to be considered specific for certain diseases, especially glanders and tuberculosis. Attempts at diagnosis by serum-sensibility have met with success at the author's hands but the pregnancy tests are not reliable, and he does not hesitate to state this fact in spite of the communication of Englehorn and Wintz. (A synopsis of the article by Englehorn and Wintz appeared in the June number of the CANADIAN MEDICAL ASSOCIATION JOURNAL.)

SALVARSAN IN SECONDARY ANÆMIA AND NUTRITIONAL DISORDERS.

From the Dermatological Clinic of PROFESSOR JACOBI, of Freiburg. *Muenchener Medizinische Wochenschrift*, No. 27, 1914.

Anyone who has used salvarsan must have observed that in the majority of cases the body fat increases with the treatment until the superficial veins no longer stand out as before; also the venous blood becomes almost arterial in colour. Increase in body weight is the rule and the appetite always improves. These changes are readily understood when one considers the arsenic content of salvarsan, for arsenic has long been used to produce just such results. As to the effect on the blood opinions differ, Bateman finding that arsenic actually injured the circulating corpuscles but stimulated the bone marrow to increased production. In the autumn of 1913, salvarsan was tried in the Freiburg clinic for cases of secondary anæmia, malnutrition, and the like. The aim of the treatment was to avoid, by small doses, any toxic action of the arsenic and by intravenous medication to produce rapid results. As is known, arsenic taken by mouth is liable to disturb the digestion and also the drug will in time lose its action unless the dose is steadily increased. Intravenous injections of atoxyl have been discarded owing to the danger of optic neuritis. The

cacodylates cause a most unpleasant garlicky taste in the mouth and their action is uncertain. Therefore salvarsan, administered intravenously, was considered the therapy of choice. At first old salvarsan was used, but was later supplanted by neosalvarsan owing to the simplicity of its administration and the fact that the results obtained were the same. The apparatus consists of a 1 cc. Record syringe and a small dish in which to dissolve the neosalvarsan. These are kept in alcohol and do not require boiling. The injection takes only a few minutes and requires no assistant. Blood is first aspirated into the not completely filled syringe to make sure that the needle is in the vein and the injection slowly made. In a number of cases of severe tuberculosis the hæmoglobin percentage continued to drop although the body weight increased, and it seems as if in these cases the bone marrow does not respond to the arsenic stimulation. A severe case of psoriasis rapidly improved as did several other cases of chronic dermatitis. Many of these cases had resisted all other forms of treatment. The dose was from '05 to '075 g. of neosalvarsan, given twice a week for about six weeks and, on the whole, the results were astonishingly good.

London, Ont.

G. C. HALE

THE following appointments to the resident staffs of Montreal hospitals have been announced. Royal Victoria Hospital: Drs. N. Brown, T. A. Malloch, C. R. Joyce, A. T. Henderson, Stowers, J. R. Fraser, Delahaye, J. C. Wickham, E. C. Levine, A. M. Fisher, Paterson, W. C. Gowd, J. P. Bilodeau, K. F. Rogers, F. W. Tidmarsh, D. E. Wiley, E. M. Morris, and Ross.

Montreal General: Drs. Albert Ross, A. B. Walter, H. E. Cumming, C. H. Robson, C. C. Burchard, A. S. Kirland, H. C. Dixon, L. B. Hirschberg, Carl Maaser, G. A. Fleet, J. A. Couillard, A. B. Illievitz, David Hartin, E. B. Convery, E. C. H. Windeler, A. T. Sohl, H. P. Wright, D. Waterson, J. C. Lee, J. F. Gallagher.

Maternity Hospital: R. A. G. Bauld, superintendent; R. McGibbon, R. Kelso, J. Gallagher, G. A. Fleet.

Alexandra Hospital: Dr. M. A. Oulton, superintendent, R. B. Robertson, E. V. Murphy.

Res Judicatæ

PARALYSIS AND TICK-BITE

IT is two years since the first suggestion appeared in the pages of this Journal (Vol. II, pages 686 and 1118) that in British Columbia peculiar symptoms might follow in children who had been bitten by ticks. Since that time many observations and some experiments have been recorded in a considerable number of papers; and now, "tick paralysis" is definitely recognized as a clinical condition.

The present situation of our knowledge is that paralysis, which has been ascribed to the bites of ticks, has been observed in children and possibly adults—in the latter in British Columbia alone—in British Columbia, Oregon, Wyoming, Montana and Australia. A paralysis of sheep has been attributed to the bites of ticks in British Columbia and South Africa. The ticks which are said to produce these affections belong to three or more species. Paralysis has been experimentally produced in lambs and in a dog by the bites of a common "wood tick," *Dermacentor venustus*; an experimental proof has, therefore, been added to the already sufficiently established clinical fact that the bites of some ticks are capable of producing symptoms of paralysis.

The paralysis is something quite apart from the local lesions which may follow at the site of a tick bite, and it is, clinically, quite distinct both from the recognized diseases, such as "spotted fever," already known to be transmitted by the bites of ticks to men, and from certain other, insufficiently defined, affections which have been described as being caused by the bites of ticks.

The usual history of a case of paralysis is that a young child perfectly well one day, on the next has more or less complete paresis or paralysis. Sometimes the paralysis is the only symptom noticed; probably most often there is also fever, rapid pulse, and other constitutional symptoms. The child may be dull and stupid and it may have convulsions. If the tick is not found and removed the child may die; if it is found and removed the symptoms disappear, under the usual general treatment of a sick child, within a few hours. The recovery is complete.

Although the rapidity with which the paralysis disappears upon the removal of the tick suggests that the paralyzing agent may be a toxin elaborated by the tick, nothing is known of the way in which the paralysis is produced. Not every tick-bite causes paralysis in laboratory animals, nor in human beings, and there is ground for thinking, if the paralysis be due to a substance secreted by the tick, that that substance may be one distinct from the anti-coagulin contained in an extract of ticks.

So far as the general practitioner is concerned, a knowledge of the existence of such an affection as tick paralysis makes it necessary for him to carefully examine every child, in whom the symptoms associated with tick-bite have appeared, for the presence of ticks; this becomes especially true for those who practise in country districts, where children are most liable to come in contact with ticks. If a tick is found it should be removed carefully; if its head be torn off and left behind in the skin when the tick is taken away, the tiny wound, made by the tick when it attaches itself, may be infected with pus-producing organisms, and local inflammation then results. It is often possible to make the tick loosen its hold by gentle traction; some of those practising in British Columbia say that they are accustomed to make a tick detach itself by burying it in grease so that it can not breathe and is forced to move. One practitioner advocates holding a lighted match just beneath the tick until it becomes too hot for it to remain! If the tick can not be made to loosen its hold, the tiny portion of skin in which its mouth parts are buried can easily be snipped out, almost painlessly, with a pair of scissors, and the resulting wound, which scarcely does more than reach the corium, is then dressed antiseptically. In all of the cases recorded complete recovery has been obtained by the removal of the tick followed by rest in bed, catharsis, good food and, when it has been necessary, slight stimulation.

Although the last two years have added much to our knowledge of the effects which may follow the bites of ticks in North America, much remains to be learned. It is to be hoped that every practitioner who meets with a case in which symptoms are ascribed to the bites of a tick will examine the case carefully and record his observations.

JOHN L. TODD

CANADIAN MEDICAL ASSOCIATION
ANNUAL MEETING, JULY 7TH TO 10TH, 1914

A.—REPORTS OF COMMITTEES

1. *Abstract of the Report of the Finance Committee to the Executive Council on the work of the year since the last annual meeting*

THE report dealt chiefly with the management of the JOURNAL. Eight meetings had been held in Montreal, and one in Toronto. The dispute of last year with the publishers concerning the undesirable nature of some of the advertisements appearing in the JOURNAL had been continued. But the demands of the committee had been largely met, the more objectionable advertisements having been withdrawn, and considerable improvement both in the amount and character of the advertising matter was reported. With respect to the organization of the profession, correspondence had been carried on with the affiliated associations, urging them to bring forward again this year at their annual meetings the question of intraprovincial affiliation and establishment of district societies. They had also been requested to elect their proportion of delegates to our Executive Council. So far this had been done only by Ontario and New Brunswick. Dissatisfaction having been expressed by some members of the Ontario Medical Association with the terms of affiliation of their association with the Canadian Medical Association, a meeting of the Committee was held in Toronto at the time of the annual meeting of the Ontario Association in May. The most serious objection had arisen from the omission of the annual meetings of that association in 1910 and 1913, when the Canadian Medical Association met in Ontario. It was decided that the Executive Council should be asked to amend Article VII of the Constitution so as to permit affiliated provincial associations to hold their annual meetings irrespective of the place of meeting of the national association. (This amendment was carried at St. John.) The action taken by the Ontario Medical Association in the matter was to refer the question to a committee, as already reported in the JOURNAL (June, p. 517). Of the seven thousand five hundred physicians in Canada, one thousand four hundred and eighty-three

were now members of the association. There had been a net gain of sixty-one in membership during the year. While two hundred and seven-three new names had been added to the list, two-thirds of these having joined at the London meeting, the membership of two hundred and eleven in all had been discontinued, forty-nine of these on account of non-payment of fees. Twelve members had died. The publishers had again commenced active canvassing this year, having added forty-five new members: and the members of the Committee had personally signed, in the name of the Executive Council, one thousand two hundred circular letters to recent graduates who were not yet members. The Committee requested that the members of the Executive, each in his own district, take an active part in stimulating interest in the association and in gaining new members. The amount of desirable material which the editor now has to refuse on account of lack of space, would indicate that the time is ripe for a fortnightly or weekly issue of the JOURNAL. But until the circulation increases considerably, the JOURNAL must continue as a monthly.

The secretary-treasurer's financial statement for the calendar year 1913, together with the auditor's report, was appended to the report. The statement, a summary of which appears below, showed the finances of the Association to be in a satisfactory condition. Compared with 1912 (v. JOURNAL, Vol. iii, August, p. 722) the disbursements had increased by nearly \$1,600. This increase was due partly to increased circulation and to a larger proportion (three-quarters) of the annual editorial allowance being required, but chiefly to the new arrangement whereby the offices of secretary and treasurer had been combined and put upon a salaried basis. To offset this increase in disbursements, however, there was a slightly greater increase in the receipts. The year commenced with a bank overdraft of \$126.68 and ended with an overdraft of \$203.97. Thus \$77.29 was added to the deficit during the year. Beginning with 1913, however, the Association is entitled to receive from the publishers a certain proportion of the annual profits of the JOURNAL. The Association's share for 1913 has been determined at \$214.97, which sum, if it could have been applied to the receipts for that year, would have converted the deficit into a small surplus. From now on this should prove an increasing source of revenue to the association.

Messrs. E. B. Savage & Company, chartered accountants, reported that they had made a complete audit of the books and accounts of the Association, and that they had found the books in

good order, the accounts correct, and that all their requirements as auditors had been satisfied.

SUMMARY OF FINANCIAL STATEMENT FOR THE YEAR ENDING DECEMBER 31ST, 1913

Receipts

Annual fees.....	\$7,467 02	
Reprints.....	390 02	
Total receipts.....	<u>7,857 04</u>	
Balance, bank overdraft December 31st, 1913.....	203 97	
		<u>\$8,061 01</u>

Disbursements

Bank overdraft, January 1st, 1913.....	\$ 126 68	
JOURNAL account.....	3,846 45	
Editorial allowance paid.....	1,125 00	
Montreal Medical Journal Co., payment to stockholders (\$5,000.00 at 6 per cent.).....	300 00	
Refunds paid affiliated provincial associations:		
Ontario 1913.....	\$292 00	
British Columbia 1912.....	40 50	
Alberta ".....	80 00	
Saskatchewan ".....	38 00	
Manitoba ".....	74 50	
New Brunswick ".....	25 50	
Nova Scotia ".....	43 50	
	<u>\$594 00</u>	
General expenses:		
Salary, secretary-treasurer.....	\$1,000 00	
Salary, stenographer.....	531 25	
Postage, stationery and sundries.....	209 95	
Legal expenses.....	50 00	
Travelling expenses.....	29 30	
London meeting.....	248 38	
	<u>\$2,068 88</u>	
		<u>\$8,061 01</u>

2. Report on Behalf of the Committee on Public Health Legislation

This committee was named on a proposal to bring about uniformity in the provincial Public Health Acts (v. JOURNAL, August, 1913, p. 734).

I regret to have to report that, as a committee, we have done nothing, for a reason which appears below.

A little consideration showed that the task described above is more suited to a sister organization, the Canadian Public Health Association (C.P.H.A.) and that a somewhat different yet closely related task lies closer to our (the Canadian Medical Association's) hand.

In Canada there are two sets of statutes bearing on medical practice: the Medical Acts deal with matters of education and

administration; the Public Health Acts provide for the practical side of public preventive medicine. These are provincial statutes, and although they are concerned with the same fundamental facts in each province, yet they vary from province to province. The natural laws of health and disease, and the principles of preventive medicine and curative medicine, are the same all across the length and breadth of Canada, and these truths are now given recognition in the Canada Medical Act. The complement to this Act is harmony and uniformity among the provincial Acts mentioned. This does not mean the surrender of provincial rights, but it does mean resultant strengthening of these and also of the medical profession in every province in Canada. The change in the Acts can not be brought about suddenly, however, but will require years of persistent, untiring effort, just as did the Canada Medical Act, chiefly to overcome ignorance, prejudice and long-established traditions which only slowly give way to modern advances and reforms.

The adoption of a clear-cut plan of action would hasten the attainment of the goal, for which the following is a brief outline: The Public Health Acts should be undertaken by the Canadian Public Health Association which should have for the purpose a standing committee on legislation. The chairman and secretary of our Section on Public Health are always active members of the Canadian Public Health Association and might well be *ex-officio* members of that committee, thus linking the Canadian Public Health Association and the Canadian Medical Association together in the work. The Medical Acts should be taken in hand by the standing committee of the Canadian Medical Association on medical education (for this and other purposes). This committee should work out a "model" medical act having in view its adoption in the various provinces. This model should be brought before local medical societies, provincial associations and medical councils for their information, suggestions and formal approval. This propaganda might well be combined with a campaign for a more thorough-going organization of the medical profession in Canada, articulating local medical societies with provincial and these latter more closely with the Canadian Medical Association, and everywhere increasing the memberships.

In this revision of legislation upon a plan approved and backed by a united national body we should find the best and surest way of dealing with such excrescences as osteopathy, chiropractic, so-called "Christian Science," and other evils which the general public so blindly embraces.

Long before this work might bear fruit of amended legislation, it would certainly result in much good within the profession, wiping out narrow "provincialism" and creating more harmony, higher efficiency and greater effectiveness in all the constituent units of the Canadian Medical Association, and also in the latter itself.

The need for the proposed work is convincingly seen in the incongruous existing situation regarding osteopathy in the several provinces to-day; or, again, in the history of recent events regarding medical practice in England. Preventive medicine is certain to be taken more and more under state control even in this country, and doubtless in time general and special curative medicine will be also. If we do not take our full part in shaping aright the coming changes, it will fare ill with our profession at some future time.

Respectfully submitted,

D. G. REVELL, Chairman.

University of Alberta, June 30th, 1914.

This report was adopted by the Executive Council, and the recommendations approved.

Other reports, notably those of the Committee on Applied Sociology, and of the Milk Commission, are reserved for future publication.

B.—TRANSACTIONS OF THE EXECUTIVE COUNCIL

1. *Amendment to the Constitution*

Dr. F. N. G. Starr introduced the motion, of which he had given notice, that Article VII of the Constitution be amended to permit of provincial branches holding their annual meetings irrespective of the place of meeting of the Canadian Medical Association, and that this be accomplished by striking out all the words of the Article after the words "Executive Council." This was seconded and carried. The Article will therefore read in future as follows: "The meetings of the Association shall be held annually at such time and place as may be determined by the Executive Council."

2. *A Committee on Higher Qualifications*

Dr. McCallum, as chairman of a committee appointed last year to study the question of the establishment of a College of

Physicians and Surgeons of Canada, moved, seconded by Dr. F. N. G. Starr, that the following be now appointed a committee (1) to inquire into the desirability and feasibility of establishing a non-teaching college of Physicians and Surgeons in Canada to grant higher qualifications in medicine and surgery, and (2) to report at the next annual meeting: Dr. W. W. White, of St. John, chairman; Drs. G. E. Armstrong and W. F. Hamilton, of Montreal; A. McPhedran and I. H. Cameron, of Toronto; J. R. Jones and Halpenny, of Winnipeg; O. Weld, of Vancouver; O. M. Jones, of Victoria, and the proposer and seconder. The motion was carried.

3. *A Federal Department of Public Health*

Moved by Dr. MacLaren, seconded by Dr. McDougall, and carried: That the Standing Committee on Legislation be instructed to organize a strong delegation to wait upon and memorialize the Dominion Government, again urging the establishment of a federal Department of Public Health.

C.—SECTION OF PUBLIC HEALTH

1. *Resolved:* That the medical inspection of school children is a sanitary measure, and should be placed under the control of the Medical Officer of Health in so far as possible.

2. *Resolved:* That the Canadian Medical Association represent to the Postmaster General of Canada that it is very desirable that notices of infectious diseases addressed by physicians to local medical officers of health be permitted to pass through the mails free of postage, and that a committee be appointed to lay the matter before the Postmaster General.

This resolution, moved in the Section by Dr. Hattie, and seconded by Col. Jones, was submitted to the Executive Council, and by them referred to the Finance Committee for decision.

3. *Resolved:* That a committee be appointed from this Section to communicate with the Executive Council to the end that the Department of the Interior be urged to arrange for the more efficient examination and selection of immigrants coming to Canada, and also suggesting to the Department that initial examinations be made at the port of departure before the embarkation of the immigrants.

This resolution was submitted to the Executive Council and approved.

4. *Report on a Standard for Ice Cream*

To the chairman and members of the Public Health Section: Your Committee has considered the communication from Dr. A. McGill, chief analyst, Inland Revenue Department, and begs to report:

1. That in the opinion of the Committee the basis, from the hygienic standpoint, of the composition of ice cream should depend (a) upon its digestive value, (b) upon its nutritive value, and (c) upon the materials contained in it being free from adventitious substances or the products of decomposition.

2. That the fact of ice cream being recommended by physicians to the sick and convalescents would seem to depend upon the fact that in the process of manufacture the materials of ice cream are finely divided by centrifugal or other process, forcing air through the mixture in the process of freezing, and thereby increasing its bulk by more than double.

3. That while materials other than cream may be similarly divided, they do not result in a mixture which can possess the same qualities as those of finely divided butter-fat.

4. That as normal milk contains 3·5 per cent. of butter-fat, it may fairly be assumed that in a mixture increased to double the volume we have, if we increase the butter-fat present to double that found in normal milk, a food in ice cream of high digestibility, and approaching the normal of food value in fats possessed by normal milk.

5. That in the opinion of your Committee it is proper that a minimum standard of cream in ice cream be fixed, based, say, upon a butter-fat content of 7 per cent. of the mixture, as a legal standard, in the same manner as milk has 3 to 3·5 per cent. of butter-fat fixed as a normal.

6. That with such minimum standard made legal, the public would be assured not only of a food, in ice cream, having a standard nutritive value, but also one whose value from the commercial standpoint could be approximately fixed.

7. Your Committee therefore recommends to Dr. A. McGill the legalizing of such a standard.

(Sgd.) P. H. BRYCE.

J. A. AMYOT.

W. H. HATTIE.

AMENDMENT.

When this report was presented to the Section it gave rise to some discussion. Drs. Hodgetts and Elliott and Senator Daniel, amongst others, raised objections to the lowering of the standard of butter-fat. The following amendment was finally carried:

"That in the opinion of this Association the term 'ice cream' should be restricted to a mixture of the present standard of butter-fat now established, and that mixtures containing a less percentage than the standard should be sold under other names."

[By no means all of the ice cream sold as such in Canada conforms to the present legal standard of butter-fat content, which is relatively high, namely, 14 per cent. The Inland Revenue Department has had under consideration the advisability of lowering this standard. We are informed that the standard in most of the United States is only 7 per cent., and that in none of them is it over 12 per cent.—Ed.]

Obituary

DR. L. C. P. MASSICOTTE died at Keene, New Hampshire, in the fifty-seventh year of his age. Dr. Massicotte was born at Sainte Geneviève de Batiscan, Quebec. He first went into practice at Chicago, then at Milton, and afterwards at Keene. He was president of the New England Medical Association at one time.

DR. JAMES WEIR RENWICK, of Courtland, Ontario, died July 3rd, in the sixty-eighth year of his age. Dr. Renwick was born at Moffatt, Scotland, in 1847. He graduated from Trinity College, Toronto, in 1875. A widow and two sons survive him.

DR. JOHN JOSEPH CASSIDY, of Toronto, died August 1st, after a brief illness. For some years past Dr. Cassidy has edited most ably the *Canadian Journal of Medicine and Surgery*, and his loss will be felt in the fields of both medicine and literature. Dr. Cassidy's parents came to Canada from Fermanagh in Ireland, and he was born in Toronto in 1843. He was educated at St. Michael's College, Toronto, and at the College of Ste. Anne de la Pocatière, Quebec. Entering upon the study of medicine at the

University of Toronto, he was gold medallist and received the degree of M.B. in 1868, and that of M.D. in 1869. For some years after graduation, Dr. Cassidy was physician at the House of Providence and was connected with the Toronto General Hospital, and during the course of a busy life it fell to his lot to fill many important positions. He was president of the Toronto Medical Society, an examiner in therapeutics and medicine at the University, a member of the provincial board of health, the separate school board, and the library board; he also represented St. Michael's College on the University Senate. Dr. Cassidy married in 1878 and is survived by his widow and ten children.

DR. WILLIAM IVAN SENKLER, of Vancouver, died at Savary Island, July 29th. After graduating at the University of Toronto in 1891, Dr. Senkler studied in Edinburgh and Glasgow. He had practised in Vancouver for about fifteen years, and his sudden death is much regretted.

News

MARITIME PROVINCES

THE Dominion Coal Company intends to build a hospital at New Waterford. The estimated cost will be from sixty to seventy thousand dollars. When built, the hospital will be maintained by the town of New Waterford.

ONTARIO

AN adjourned meeting of the Kenora town council was held on Tuesday, July 14th, when it was decided that a grant of \$2,000 should be made to the Royal Jubilee Hospital, and of \$1,000 to the St. Joseph's Hospital, the fact being taken into consideration that a large number of charity patients had been treated at both hospitals. The decision has aroused some dissatisfaction on the grounds that the St. Joseph's Hospital is a strictly sectarian and private hospital and therefore not entitled to a civic grant.

IT has been decided that the four acres of land known as

"Green bush" belonging to the Berlin and Waterloo hospital board is to be used as a public park until such time as it is needed for hospital purposes.

Two cases of smallpox have been reported in the neighbourhood of London. The source of the infection, which is of the mild type, is unknown.

A FIRE which destroyed the convent adjoining the Hôtel-Dieu, Cornwall, recently, necessitated the hurried removal of many of the patients. The damage sustained by the hospital itself was, fortunately, slight.

THE following officers of Nos. X, XI, and XIII Field Ambulances, with headquarters at Toronto, have volunteered for active service with the Army Medical Corps: Drs. T. B. Richardson, W. B. Hendry, G. A. Winters, W. H. Lowry, J. S. Boyd, H. L. Jackes, A. S. Lawson, H. Buck, D. W. McPherson, C. H. Gilmour, C. A. A. Warren, C. J. Currie, E. B. Hardy, A. G. Rice, H. R. Holme, J. H. Wood, W. L. C. McBeth, H. Orr, G. D. Farmer, D. P. Kappele, W. H. Tytler, D. G. McIlwraith, W. Bethune, W. Carrick, D. A. McClenahan, H. Jones, R. R. McClenehan, J. A. Roberts, W. A. Scott, R. S. Penetecost, G. R. Philip, N. S. L. Yellowlees, W. T. McLean.

QUEBEC

REPRESENTATIVES from the towns on the banks of the St. Pierre River met in June to discuss the danger of a typhoid epidemic, which might result from drinking the polluted water of the river. According to a report issued recently by the provincial board of health, the river is no better than an open sewer; it receives sewage from Montreal West, Notre Dame de Grace, Emard, Cote St. Paul, Lachine and Ville St. Pierre. It was decided that the matter should be reported upon to the provincial board of health, and that each municipality connected with the watershed of the river should appoint an engineer and one other representative to form a committee to study the conditions and to make suggestions for their amelioration.

THE following officers attached to No. IV Field Ambulance have volunteered for active service abroad: Drs. G. Bauld, F. A. C. Scrimger, R. T. Rodgers, E. B. Brown, J. D. Morgan, H. W. E.

Lockhart. The following officers attached to No. V Field Ambulance went into camp at Valcartier on August 17th: Drs. R. P. Campbell, Shanks, R. McGibbon, Ramsay, Windeler, J. G. W. Johnston, Cummings, F. S. MacKay, Mustard, and Robson.

Dr. C. B. Keenan, D.S.O., has accepted the position of regimental surgeon to the Princess Patricia's Light Infantry. Dr. Keenan served through the South African War as surgeon to Strathcona's Horse.

SIR THOMAS RODDICK, who was in Alsace at the time of the outbreak of hostilities, reached London after a very trying journey. Shortly after his recent arrival in Montreal, a cold which he contracted on the journey developed into pneumonia, from which he is now, fortunately, recovering.

ALBERTA

A HOUSE is to be fitted up by the Medicine Hat General Hospital Board to serve as a tuberculosis hospital. About one thousand dollars will be expended for this purpose.

SASKATCHEWAN

THE following are the names of those who have passed the recent examinations of the College of Physicians and Surgeons of Saskatchewan: E. M. Carefoot, R. L. Carefoot, F. F. Dunham, F. L. Eberhart, P. Heddesheimer, F. Hutchinson, R. Le Blond, A. MacIntosh, W. H. Moon, A. C. Nixon, W. A. Reddick, I. Rio, D. E. Ross, J. C. Smith, J. Stanfield, N. R. Stewart, P. L. Straith, H. S. Wismer, R. C. Dick, J. B. Trudelle, B. C. Hardiman, M. H. W. Fizzell, H. J. Smith, and E. A. Richardson.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Public Health Journal, July, 1914:

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| Tuberculosis and its control | C. S. Mahood. |
| The practical application of the Wassermann test in public health work . . . | J. H. Laidlaw. |

- How Toronto controls her milk supply H. Lloyd.
 Inter-relation of physician, citizen, and
 state of public health J. W. McIntosh.
 The dawn of a to-morrow C. G. Sutherland.
 Alcohol, its place and power Sir James Grant.
 Baron Larrey, the medical tactician . Col. G. Carleton Jones.

The Canadian Journal of Medicine and Surgery, August, 1914:

- Living out of doors W. B. Kendall.

Dominion Medical Monthly, August, 1914:

- Surgical limitations in diabetes H. A. Bruce.

The Western Medical News, July, 1914:

- A method of treating separation of the
 upper humeral epiphysis S. Alwyn Smith.
 A rather simple and useful expedient in
 ether anæsthesia J. W. Turnbull.

Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE thirteenth regular meeting was held Friday evening, April 3rd, 1914.

The evening was devoted to a discussion on the Treatment of Puerperal Infection. The subject was opened by Dr. J. R. Goodall with a paper illustrated by a lantern demonstration. Different points taken up in the paper were discussed by Drs. W. W. Chipman, J. W. Duncan, D. J. Evans, H. M. Little, James Perrigo, H. L. Reddy, and W. Grant Stewart.

Dr. Goodall's paper appeared in the JOURNAL of July, page 589.

DISCUSSION: Dr. W. W. Chipman: This symposium has been admirably opened by Dr. Goodall in his able and instructive paper. He has crystallized admirably the feeling of conservatism and the general trend towards conservatism that is manifest at present on this continent in the treatment of puerperal infection. What I

purpose to try to do is simply to lay down a few general principles of treatment: it falls to my fellow-members of this society to discuss special cases or special conditions. I think we need not apologize for bringing this subject before you; it is perhaps the most important subject in obstetrics and gynæcology. As the late Dr. Collingworth said: "the most important, more important than all the rest put together in obstetrics." As you all know puerperal infection is a wound infection and without any doubt it is the most common and the most serious with which we have to deal. There is no better incubation chamber than the puerperal uterus. The infection is endemic and has a very high mortality. Many women die in childbed and the price of motherhood is still cruelly high. Five thousand women die in England and Wales every year of puerperal fever and in Canada, Maine, New Hampshire, and Vermont the number amounts to five hundred. Women, the best citizens in any community, the most valuable citizens and in the prime of life! In the Royal Victoria Hospital, with a service of twenty-four to thirty beds, in the last ten years we have admitted ninety-four cases of puerperal infection and of these twenty-nine died, a mortality of 30 per cent. And during this period of ten years in the same small service we opened the abdomen in a major operation 1,553 times and we had, following these operations—undertaken for all sorts of pelvic conditions—thirty-seven deaths. Twenty-nine deaths from puerperal infection of ninety-four cases admitted, and from 1,553 major operations only thirty-seven deaths. After all there may be some truth in the somewhat cynical remark of an eminent surgeon in New York who said: "You can boast as much as you like, yet it is a good deal safer to have your abdomen opened for any chronic surgical condition than it is to bear a child." The reasons of course for this frequent incidence of puerperal infection and high mortality are perhaps twofold, and the first and the chief is this, that in America we do not teach good obstetrics. Whitridge Williams said two years ago, there are one hundred and twenty medical schools in the United States and Canada and in these only six have anything like adequate clinical facilities for the teaching of obstetrics. The other reason is this—a great deal of the work in obstetrics is done under very bad surgical conditions, necessarily so because many of the homes are poor. The two chief reasons are then, the comparatively inadequate teaching facilities and the fact that a large part of obstetrical practice is done under very bad surgical surroundings. Accordingly, as Whitridge Williams says, though in the

service of large cities the incidence of puerperal infection is considerably diminished, yet in private practice, and especially in urban districts, puerperal infection is nearly as common to-day as it was ten years ago. I have said, and it is true, that obstetrics has scarcely kept pace with her two hand-maidens, medicine and surgery, and yet a great deal of work has been done of late years, chiefly along the lines of bacteriological research. The whole flora of the genital tract has been carefully studied and it has been found that the vulva is the seat of danger and that the vagina is practically free from organisms. The important bearing of this is that in every case the vulva is to be regarded as part of the surgical field and is to be treated accordingly—sterilized. The vagina is to be treated with the same respect as the peritoneal cavity. Then there comes the question that Dr. Evans will deal with, and that is the special prophylaxis in the management of the third stage. See that the uterus is empty and when it is empty leave it alone.

Now the question of the actual treatment of the infection if it arises: Here we find ourselves in accord with Dr. Goodall's paper. Two years ago Dr. Jellinghaus, of the New York Lying-In Hospital, asked me, "How often do you go into an infectious uterus?" I confessed that I did enter it sometimes. He said: "Don't. Never go in." I said, "What do you do?" "I drain them. I freeze them and oxygenize them." The patients are placed in the Fowler position, an ice bag is applied to the abdomen and they are kept out in the fresh air. The crux of the matter is, given a case of puerperal infection from the clinical picture, from the pulse rate, the temperature chart, or even from an intra-uterine culture, you cannot be quite sure of the whole infection that you may be dealing with. The infection so often is a mixed one. And if you cannot be sure of its exact nature treat it as if it were a maximum potential infection; and that being so you stay out of the uterus. It is a good surgical principle that in an acute infection you never treat that infection or tackle it, from the rear. Now if you can get ahead of it, head it off, that is the correct and wise thing to do. But anatomically in the pelvis we cannot do this and when we enter the infected uterus we really treat it from behind and tend to drive the infection further inward and along the lymphatics and blood vessels. The expression of a Missouri colleague is apt: "The streptococcus in the uterus is the worst kind of a mole that we ever grew in Missouri and awfully dangerous if you tackle it from behind." Any intra-uterine interference is tackling it more or less from behind.

Now the few general principles that I wish to present to you are: Treat the vulva as part of the surgical field in any given case of parturition; treat the vagina in the healthy parturient woman with the same respect as you would her peritoneal cavity; the careful conduct of the third stage—the most important of the three. In any given case of infection keep out of the uterus. I feel sure of one thing that if we tried first in any given case of infection the patient in the Fowler position, ice bag to the abdomen, and fresh air, we would save more cases than we do by going into the uterus. I am quite ready to admit that there are cases where you explore the uterus and use a douche and the patient recovers; but the point is that she has run a risk by such treatment, one that may not have appeared to us, and yet she has run a risk which I think if we had stayed out of the uterus she would have escaped.

Dr. J. W. Duncan: I think that the remarks that I have to make are more in the line of emphasis than in that of discussion. Dr. Goodall, with Dr. Chipman's corroboration, has expressed what we as a group of men at the Maternity Hospital fully believe in. The advocacy of the non-invasion of the uterus is of course the only one thing to consider; the dangers that one exposes a woman to when leaving the uterus to clean out what might be there are hardly of sufficient value to overcome the dangers that we expose the woman to by entering and doing this for her. In the case of retained membranes there is not sufficient indication to enter the uterus; possibly the case of retained placenta might hold out greater inducements to enter.

There are three types of men practising obstetrics to-day: those who practice in the hospitals, those who practise in the city, and those in the country. With retention of placental tissue and a concurrent hæmorrhage—negligible at first—this does not mean that it is so for the first twenty-four or even seventy-two hours, those who can keep their patients under observation should keep out. The question is, in the country, or even in the city, where distance of physician from patient is a factor, is it safe to leave your patient with the possibility that hæmorrhage may come on suddenly when one is perhaps a mile or more away from the house? It certainly is a risk. And I would like to take the stand of keeping out of the uterus if the surroundings will absolutely guarantee the possibility of getting assistance to that woman at once in case she needs it. On the other hand, where such a guarantee can not exist, if the physician is positively sure that he is working

on a non-infected case and that his technique is good, I should go in and remove the placental tissue *at the time of labour* or follow Dr. Goodall's suggestion and leave it there. The danger of going in after and making a secondary exploration unless the demand is imperative, viz: severe hæmorrhage, is too great to be considered.

Another point is this: We have heard the slogan of Dr. Chipman, emphasizing Dr. Goodall's paper—keep out of the uterus—I may say that I would go further in conservatism and if we are to keep out of the uterus why not keep out of the vagina? I can hardly see why, if it is not possible to give a douche into the uterus without the fluid being carried through the tubes into the peritoneal cavity or into the pelvis, we should endanger the woman by giving a vaginal douche which carries material up into the uterus, thus counteracting the use of the vaginal douche from the standpoint of danger. If the douching were done through the rectum it would give the same effect, which is a counter-irritant action on the uterus stimulating it to bring down any retention products which might be there. If the drainage is good it will come away of itself.

The other point I would like to bring up is a slight difference of opinion as regards the infective cause. In most sapræmic cases one finds that instead of copious lochia one gets very little—it is retained—and that the reaction on the patient is more from the point of retained lochia and absorption of the products of infection. The infection is there and is of a low grade and the condition, it seems to me, results more from the retained lochia. My stand in this matter would be that if I have a soft, boggy uterus, I must necessarily have a uterus in bad position, and that generally means a retroversion and the retention is held back by a kink in the organ. The proper course in that case is to get the uterus to do all it can, get your position, have your stimulation, and keep out of the uterus until the last moment. But if by palliative treatment you fail to get drainage after waiting a reasonable time, only then are you justified in going into the uterus.

Dr. D. J. Evans: I agree absolutely with the speakers in their attitude of conservatism. I have previously been an apostle of interference, advocating in my earlier days the curette, the douche, etc., but as a result of my hospital experience I have for some time now been very conservative in my treatment of septic cases. This has governed me so much that I have become extremely conservative even in making internal examinations of women in labour.

PROPHYLAXIS: A great deal has been written and said about

surgical technique as applied to obstetrics. After all the prophylaxis of obstetrics can be summed up in a few words, that is, keep out of the vagina. If you do this there is very little danger of infection. If you regard the genital canal as it is in fact, septic at the vulva, antiseptic in the vagina, and aseptic in the uterus, common sense would tell you that the less you interfere in the case the less chance you have of carrying infection from without. With regard to technique: the simpler the technique the better. In private practice shave the vulva, cleanse with soap and hot water. We usually afterwards apply alcohol to dissolve the soap and then bathe in antiseptic solution. Lately I have used an iodine solution applied to the vulva preliminary to any operative work and we think it has had some effect in the right direction. With regard to the use of gloves, it is certainly impossible to keep the hand clean and the use of gloves is a very good practice. But the use of antiseptics and the use of gloves should not give one the feeling that one can with greater impunity invade the vagina or the uterus. The important point is to keep out of the vagina. In private practice I conduct by far the largest proportion of my cases without a vaginal examination. The only knowledge one really ascertains by such an examination is the condition of the os, whether it is dilated or dilating. Now in the ordinary case the natural condition is for effective uterine contractions to bring about dilatation in course of time; and one can do very little, in fact practically nothing, to hasten dilatation by digital interference. I am very strongly of opinion that it is extremely unwise to attempt digital dilatation of the cervix with the object of facilitating labour. The best dilatation comes from within, the cervix is a better dilator than the physician's fingers, the membranes the best dilator of all. One can ascertain whether the head is coming down without vaginal examination very easily by pressure on the perineum of the patient at the acme of a pain. One can very soon feel the increased resistance, long before there is any evident bulging of the perineum. In certain cases where an internal examination is necessary it must be undertaken with the same precautions and technique as if one were making an intraperitoneal exploration.

The prophylactic vaginal douche is still used by a few and I just want to mention that it is absolutely abandoned in most obstetrical institutions, and that it is a thing of danger from what we know of the condition of the vaginal tract in labour. Even in infected cases the douche does very little good towards cleansing the vagina as an antiseptic. If it is necessary to cleanse it, it is

better to try some other means than douching. So the prophylaxis of puerperal fever resolves itself into interfering as little as possible in the course of labour, repairing lacerations about the vulva and perineum immediately after labour and, of extreme importance, the careful management of the third stage of labour. This stage is by far the most difficult from the physician's standpoint. The placenta separates in a large proportion of cases without difficulty and with the proper management of the third stage there will be very, very few cases of adherent placenta. In very rare cases there may be an organic adherence between the uterine wall, or the delay in the delivery of the placenta is due to some defective mechanism. In the Duncan method of separation where the placenta comes down the uterine wall laterally, there is usually considerable hæmorrhage. A portion of the placenta separates from the wall and slips down to the external os where it is nipped or delayed, and the sinuses being open, hæmorrhage goes on through the third stage, and it is in this condition that sometimes one is called upon to interfere. In the removal of the placenta in the third stage one is called upon to do a Crédé expression. There is a good deal of misunderstanding as to this procedure. One must not watch the clock, say ten or fifteen minutes, and then feel called upon to go in and remove the placenta. The important thing is to wait as long as there is no bleeding, till the uterus has retracted before one attempts such an operation. Otherwise you often bring about a partial separation, and then severe hæmorrhage occurs which soon proves serious. If one waits till the uterine contractions have separated the placenta it is usually not a matter of great difficulty to expel it.

There is a new method in vogue lately that is going to complicate these matters, i.e., the giving of pituitary extract to stimulate uterine action. It is being used quite a little lately, and frequently somewhat rashly. In some cases it affects the lower uterine segment and the cervix and causes spasm, and if at the same time one makes violent efforts at Crédé expulsion, one will very likely have hæmorrhage to complicate matters. Suppose you have a Duncan separation, a spasm of the cervix, what are you to do if a Crédé does not succeed in expelling the placenta? One has then to go in and remove it. One should put on fresh sterile gloves, sterilise the vulva and go in frankly and thoroughly, getting the fingers in behind the placenta, extracting it carefully and gently. Only under these circumstances do I stand for interference in the third stage of labour. Too early effort at expressing the placenta

is the commonest cause of difficulty in the third stage. If care is taken simply to palpate the fundus till the uterus has gained its tone, retraction has taken place, and the effect of the anæsthetic has pretty well worn away, in half to one hour the placenta will come away without difficulty, and it is much better to wait than to interfere.

With regard to retention of parts of the placenta I counsel leaving them alone as long as there is no hæmorrhage. In such a complication secure good drainage, apply an ice bag to the abdomen, and give strychnine to keep the uterus tightly contracted. The portions of placenta that may remain behind will either be dissolved or will come away of themselves. The whole of the membranes may be retained and never seen again; they are absorbed or come away in such small bits that they are not observed. If fetid lochia become apparent the treatment is the same. In fact as a matter of precaution in all cases of suspected retention I usually place the patient in the elevated position, apply the ice bag, give a copious fluid diet, and leave the genital canal alone. If infection does occur I place my patients in the open air, and that is about all the treatment I adopt and I find that my results have justified this course. I am very much more satisfied with this conservative treatment than I was with the active treatment by means of the curette and the douche.

Dr. H. M. Little: Is it not time some one said a word about prophylaxis? The only way to secure uniformly satisfactory results is to follow up the most careful technique with examination of infected cases to find possible loop-holes in the technique which resulted in infection. There are certain cases where it is very difficult to explain the origin of the infection, but our results will be far more satisfactory if we at least attempted diagnosis before adopting a *laissez-faire* method of treatment. There is no one present who would say that it is a matter of indifference what organisms are present in an infected throat, and advise sitting quietly by in the hope that the majority of such infections would get well by themselves; and, for my part I believe there is room for difference of opinion on the question of debris in the uterine cavity. It can do no harm to attempt a diagnosis before adopting drainage and stimulation, and at the time the material is taken for diagnosis I still probably use a saline irrigation though I do not believe that this saline has any curative power, nor can any one be more strongly averse to the employment of so-called antiseptic douches than I am. It is rudimentary to suggest that the presence of a membrane

contraindicates handling, for such evidence of infection almost invariably means infected lochia running over what had otherwise been a clean wound. It is an evidence of infection that invariably suggests the presence of streptococci—leave the uterus alone.

Dr. J. Perrigo: I can only speak as a private practitioner so far as maternity work is concerned and while I agree with what Dr. Chipman has said I may disagree with something Dr. Goodall has brought up. In looking back over my first cases, some thirty years ago, the class of houses then were little better than shacks in which our cases were confined, and yet very few of them died, they got well and were a hardy lot. There are other things besides the actual manipulation of the patient; take for instance the question of the nurse. In my own work I would rather have a nurse fresh from the hospital than one seven or eight years out. I make it a rule to ask of them two things, strict obedience and absolute cleanliness. I remember a case fourteen or fifteen years ago; when I arrived the nurse informed me that everything was all right, she had made an examination and that the presentation was normal; I found the case to be a breech. This case ran for two or three weeks a mild temperature. I am always afraid of these mild temperatures because you are never sure when it will come to a church-steeple. A few months later I was called to a puerperal case and I found it was the same nurse. This gave me the idea that you have to watch your nurse and be careful of your surroundings in the house whether it is high or low. Collingworth stated at a recent meeting that while he was encouraged by the fact that puerperal fever had lessened in the maternity hospitals in Great Britain it remained in *statu quo* in private practice. It remains here much the same; there is too large a ratio of puerperal cases in private practice. With regard to the serum, I have twice given it never to repeat it. In one of the cases there was a mixed infection, in the other no cultures were made; but I did not drop the other treatment. I am fully in accord with what has been said with regard to the vagina, it acts as a protective if you do not overwhelm it with something you introduce yourself. Occasionally I feel like Dr. Little and I doubt if I have ever waited an hour and a half for a placenta to come away, but my expression of it is very gentle and I let nature do it with the assistance of the patient as much as possible. Membranes I do not bother about and I do not use iodoform gauze. If I find there is a portion of the placenta left behind I go in after it and I take it away, and I have had no cause to regret that. But after all, particularly in private practice in maternity

work, you have got to explain to your patient the necessity of allowing you to secure the nurse, and have that nurse absolutely under your supervision.

Dr. H. L. Reddy: As to the matter of the curette I have left it off for years as invariably the results were exceedingly bad. As to the question in mild cases of using a douche, I probably have had more experience than any person present in this, and in hundreds of cases where there has been morbidity I use half a pound of peroxide of hydrogen followed by a gallon and a half of a fairly strong solution of permanganate of potash into the uterus, and the results are exceedingly satisfactory. And I use it night and morning as long as there is much bubbling from the peroxide of hydrogen. If there is no temperature the case should be left alone. After the baby comes, especially with a torn perineum, we give a vaginal douche, potash permanganate, with a light pressure, twice a day, and I find the results infinitely better than formerly.

As to the treatment with serums I have had two or three cases in which I can certainly say that it saved the patient. In the use of antistreptococcic serum, generally the fault is that it is not used in sufficient quantities; in ten or twelve hours 100 cc., and for the next couple of days 50 cc. daily at least. But unless the clinical symptoms are such that you are fairly sure that you are dealing with this infection, it is not wise to use it. A very severe rigor, more particularly a high pulse, is more important than anything else; this distinguishes a case of an ordinary sapræmia from sepsis more than any other thing. There are so many strains, however, that unless you can get the serum from the patient herself you are not likely to get good results. As to phylacogens I have tried the mixed infection phylacogen several times and I find that where the infection is not too severe it acts as a rule exceedingly well. I have no doubt that the early and sufficiently large dosage of serum or phylacogens makes a great difference in the results obtained. In one case I remember, a rather severe infection, the patient was given 2-3 cc. of a mixed infection phylacogen intravenously and it produced the most alarming reaction it is possible to imagine. There was a little improvement the next morning but the temperature again went up to 105°; we gave the magnesium sulphate solution and the temperature came down in forty-eight hours with good recovery. Another case of old tubal infection dating before the time of impregnation, and probably a gonococcus infection, improved and recovered after magnesium sulphate had been given, and in five other cases in which we gave

this three made a good recovery and they were cases which certainly would not have pulled through without it. In the case with the gonococcus infection she went to sleep while she was receiving the intravenous injection.

As to the question of not examining I fail to see how this could help, and certainly if the average man did not examine he would get into a jolly good mess in many instances. It is, as a rule, impossible to make any examination externally which would give you any idea of the condition present, but the less examining one does the better no doubt. Personally I put every patient *post partum* on ergot, digitalis, and quinine so as to keep up the uterine contractions.

Dr. W. Grant Stewart: My experience covers over three thousand cases. Among these there have been two deaths from puerperal septicæmia. The first occurred in 1889, an emergency case. The labour was normal; on the second day a chill followed by high temperature which persisted. The late Dr. T. Johnson Alloway was called in consultation. The patient, as was the custom at that time, was etherised and curetted. Death took place on the twelfth day. In this case I was unable to account for the cause of the disease. Probably if the protecting barrier had not been interfered with the patient might have been alive to-day. The second case was in 1897, also a normal labour. The patient developed a septic condition and died in six weeks. Her previous confinement, I understand, was followed by sepsis necessitating the removal of an ovary. It is possible that there may have been some latent trouble brought into action by the trauma of the second labour. My practice is to follow out the lines laid down in the discussion by Drs. Chipman, Evans, and Goodall, and I make very few examinations. If there be an adherent placenta—and I have met this condition on not a few occasions—I make it a rule, with gloved hand and the usual antiseptic precautions, to remove it. I have rarely found such procedure to be followed by any ill effects. Should there be small clots or small portions of membrane remaining I leave them alone. I feel satisfied there is less risk in non-interference. In some of these cases there is a rise of temperature and offensive lochia but the patient is usually up and about at the regular time.

In the early days of my practice I used the intra-uterine douche much more than I do now. One cannot make any hard and fast rule, but the weight of evidence is on the side of conservatism. As regards the serum treatment my experience is limited, I can recall a case which Dr. Chipman saw with me several years ago.

The patient, a multipara, had a normal labour; her daughter lay ill with scarlet fever in an adjoining room and about the fourth day of the puerperium she had a rigor and a temperature of 104°. It was thought advisable under the circumstances to give injections of antistreptococcus serum and in a few days the temperature subsided and recovery was uninterrupted. One cannot say positively that this was a case of "*post hoc propter hoc*," but it is suggestive. I have no experience with the vaccine treatment.

My routine in private practice is to examine the urine at stated intervals. If the patient be a primipara I see her at the end of the eighth month, take her measurements and note the position of the foetus. During labour I avoid as much as possible making vaginal examinations. My obstretical outfit is somewhat cumbersome, but is useful. In addition to the obstetrical bag I carry a sterilizer, etc. For every case I sterilize a set of instruments for hæmorrhage, packing the uterus, and repairing the perineum; silk worm gut is always ready in a solution of alcohol and formalin. I use when occasion demands 5 per cent. iodoform gauze for packing the uterus, and have no untoward results. With these methods before and during labour, cases of sepsis are rare. Dr. Perrigo's suggestion that the attending physician should have the selection of the nurse is a timely one. Were this course always followed it would save patient and doctor much trouble.

Dr. J. R. Goodall: My paper had to deal with the treatment of cases not with the diagnosis. Every one called in consultation would see to it that he made a thorough examination, and particularly is it advisable to have a bacteriological examination made to ascertain as far as possible just what the condition is. With regard to placental retention the removal of placenta after delivery would depend entirely upon the patient's condition, the surroundings and the presence of hæmorrhage. When confronted with such placental retentions immediately after delivery, we have to deal with tissues that so far are not infected, and the results of removal will depend upon the completeness or incompleteness of our surgical technique.

MEDICAL HEALTH OFFICERS OF NOVA SCOTIA

A MEETING of the medical health officers of Nova Scotia was held in the Technical College, Halifax, on July 15th last. The chair was taken by Dr. W. H. Hattie, provincial health officer. An address of welcome was given by Mr. Justice Drysdale, who emphasized the importance of better education of those who pay

taxes if legislation is to be effective. An interesting address on the provincial health act was given by Dr. Peter H. Bryce, chief medical officer of the department of the interior. He recalled the first meeting of the health officers of Ontario in 1886 and expressed the hope that the present gathering of the Nova Scotian health officers might be the first of an equally successful series of meetings. In his opinion a certain amount of compulsion was essential—in addition to education—before legislation could become effective, and a public health officer must be paid in proportion to the duties he was expected to fulfil so that he could devote the whole of his time to the work: moreover, he must be given the legal protection necessary to enable him to enforce his instructions. Dr. Bryce stated that the death rate in Nova Scotia was just double that in Ontario. Dr. J. W. McCullough, chief medical inspector of the province of Ontario, then gave an able address on the organization of a public health service. He gave an interesting account of public health laws in Ontario; and, speaking of the Public Health Act of that province, he referred to the omission to state the minimum salary that should be paid to medical officers of health, with the result that in some cases they receive the magnificent sum of five dollars a year. The papers were followed by a discussion on the Nova Scotia Public Health Act, and a committee was appointed to prepare amendments to the Act; it was suggested that provision for an annual meeting of the health officers of Nova Scotia might be made with advantage. Other subjects of interest to the profession were discussed and the following papers were read: "Measles and whooping cough," by Dr. W. D. Forest, Halifax; "Diphtheria and scarlet fever," by Dr. M. E. Armstrong, Bridgetown; "Tuberculosis," by Dr. George D. Porter, secretary of the Canadian Association for the Prevention of Tuberculosis; "Water supplies," by Mr. H. W. Johnston, Halifax; "Disposal of sewage," by Mr. McD. Campbell, Halifax; "Typhoid fever," by Dr. Smith L. Walker, Truro; "The health of school children," by Dr. J. G. McDougall, Halifax; "Smallpox and vaccination," by Dr. D. Fraser Harris, Halifax; and "The inspection of meats and milk," by Dr. George Townsend, New Glasgow.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Dr. Murray MacLaren, St. John, N.B. President-elect—Dr. R. E. McKechnie, Vancouver. Secretary-treasurer—Dr. W. W. Francis, 836 University Street, Montreal.

Annual Meeting, Vancouver, B.C., 1915.

ACADEMY OF MEDICINE, TORONTO:—President—Dr. H. B. Anderson. Secretary—Dr. J. H. Elliot.

ALBERTA MEDICAL ASSOCIATION:—President—Dr. C. E. SMYTH. Secretary—Dr. F. W. Gershaw.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. J. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.

CALGARY MEDICAL SOCIETY:—President—Dr. G. Johnston. Secretary—Dr. J. L. Allen.

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The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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The Canadian Medical Association Journal

VOL. IV.

OCTOBER, 1914

No. 10

VASCULAR CRISES AND ANGIOSPASM

BY ARTHUR BIRT, M.D.

Halifax, N.S.

WE have long been more or less familiar with states of generalized hypertension or hypotension; but the idea of localized vaso-constriction as an explanation of many physical phenomena hitherto rather obscure, is permeating medical consciousness somewhat slowly.

In a paper, published in the CANADIAN MEDICAL ASSOCIATION JOURNAL for 1911, Sir William Osler, always appreciative of the work of others, recounts how, in 1911, Dr. George Peabody narrated cases of transient hemiplegia and aphasia without loss of consciousness, cases in which at autopsy, although extensive arteriosclerosis of the cerebral vessels was found, there was no focal lesion such as hæmorrhage, embolism, softening or œdema. The explanation offered by Dr. Peabody was that there might well have been a recurrent spasm of the middle cerebral, or its branches, which had been sufficient, plus the thickening already present, to cause ischæmia of important brain areas, and that, in the final attack, this spasm and ischæmia lasted long enough to cause death; but that it was not complete enough, or of sufficient duration to cause softening. Peabody urged that in certain cases of transient loss of vision, spasm could be *seen* in the retinal vessels, and that therefore it was not unlikely that loss of function could, in local vascular areas of the brain, be similarly due to ischæmia. The value of Peabody's observations was early recognized by Osler, who has himself contributed to the now rapidly growing literature of the

Read at the annual meeting of the Canadian Medical Association, St. John, N.B., July, 1914.

subject. But as far back as 1893, Solis-Cohen, of Philadelphia, began to attack the subject from a different angle. In a series of papers since then, he has elucidated for us the subject of "vaso-motor ataxia." He has shown that there is a type of individual that possesses an inherent instability of the vaso-motor mechanism, so that an abnormal response takes place in the way of generalized, or often focal, vaso-constriction or vaso-dilatation (or, according to Solis-Cohen, both combined) under influences which would normally be ineffective. It was, however, the now widely known monograph of Professor J. Pal, of Vienna, "Gefässkrisen," 1905, that focused interest on the subject. This term, "vascular crises," was first employed by James Collier in discussing the features of erythromelalgia.

Under this term Pal includes all conditions which are associated with more or less sudden constriction or dilatation of the arteries, and whose symptoms and signs disappear or markedly diminish as soon as this paroxysmal change in the blood vessels passes off. His contention is: "Where the tension is produced by contraction in a definite vascular area, local consequences follow and dominate the picture. These are manifest chiefly by a peculiar painful sensation and local disturbance of function. General phenomena to a greater or less extent are manifest at the height of the tension" (quoted by Hirschfelder). Pal divides the vascular crises into: (1) Vaso-constrictor or hypertensive crises, and (2) vaso-dilator or hypotensive crises. To the former far more attention has been paid by clinicians. Pal also makes a regional division into (a) cerebral, (b) pectoral, (c) abdominal, and (d) peripheral crises. Using the condition of lead poisoning as an illustration, he brings the headaches, convulsions and coma, the transient amblyopias, the colic and occasional anginoid attacks under one common denominator—a marked rise of blood pressure, associated with more or less localized arterial spasm. Similarly in arteriosclerosis, uræmia, and tabes, many of the attacks of pain and fleeting loss of function can be thus best explained.

The writer finds it difficult to get a short clinical classification that will embrace all cases, but suggests the following one: (a) The neurotic group, including the vaso-motor ataxy of Solis-Cohen, the migraines, and possibly epilepsy (A. E. Russell); (b) The degenerative or cardio-renal-arterial group; this to include the crises of arteriosclerosis, nephritis, plumbism, some of the gastric crises of tabes (Pal), the peripheral claudications, and those of the spinal cord.

Since the publication of Pal's monograph, the literature of angiospasm and the vascular crises has become considerable. It will be remembered how ably Dr. A. E. Russell in the Goulstonian Lectures, 1909, advocated the thesis that focal angiospasm (or combined spasm and dilatation) is the immediate underlying factor in the epileptic seizure. He also urged the same causation in the case of migraine; Pierce Clark (*Am. Jrl. Obstetrics*, November, 1912) has written up the subject of vasomotor and trophoneuroses, naming amongst the clinical associations of angiospasm, neurasthenia, hysteria, traumatic neuroses, affections of special organs, angina pectoris (in its functional form) abdominal disturbances, nervous dyspepsia, and other conditions.

The cerebral crises have naturally attracted most attention. Sir William Osler and others have written on the grosser manifestations—the transient hemiplegias, monoplegias and aphasias. Whilst only the other day Professor William Russell, of Edinburgh, attributed to cerebral angiospasm the fleeting loss of memory, the attacks of mental obscurity and of inability to perform ordinary work, the recurring vertigo and other phenomena so often seen in elderly people with sclerosing vessels.

As regards that much debated point, the true cause of the pain phenomena in *angina pectoris*, one may merely refer to the widely held view that myocardial ischæmia due to spasm of the more or less diseased coronary arteries is an essential factor in its production in some cases at least. An extensive network of nerve fibrillæ has been demonstrated on these vessels (by Déhio, if I mistake not, in 1903). The wide extent of the referred pain areas in some cases of angina, involving spinal segments either above or below those in definite connexion with the heart and its immediate blood supply, have led many observers to the conclusion that the vascular crises *must* affect at times other visceral branches of the abdominal aorta. Thus Charles F. Hoover (Osler's "Modern Medicine," art. Angina Pectoris) thinks that the gastric symptoms described in some cases have been caused by disease of the arterial supply to the stomach, and not by referred pains from the heart, "so that the respiratory symptoms and nervous symptoms, and symptoms from the abdominal viscera, which have been so closely linked with attacks of angina pectoris are merely concomitant symptoms, and do not sustain an essential relation to cardiac angina."

There can be little doubt that these visceral crises have been responsible for the occasional opening of the abdomen, with negative surgical findings.

The peripheral crises, "intermittent claudication," Raynaud's disease, and its allies, are too well known to detain us; but I may remind you that Déjérine long ago described for us (and has recently repeated the description with all the *verve* and clarity of the French school) intermittent claudication of the spinal cord. This writer lays stress on its commonly syphilitic origin, its differentiation from peripheral claudication, and its inevitable result (if unchecked by treatment) in chronic spastic paraplegia.

Finally, to emphasize the wide application being made to-day of the angiospasm and claudication idea, reference may be made to two interesting recent papers. In one of these Solis-Cohen describes the angioneurotic affections of joints (*Am. Jrl. Med. Sciences*, July, 1914), in the other J. Ramsay Hunt quotes cases to illustrate the condition he names "ischæmic lumbago," or the lumbar type of intermittent claudication. He points out that, for diagnostic purposes, bending movements of the spine may be used to induce the pain and demonstrate its local and intermittent character. The movements of the spine are normal and in the beginning painless—an important distinction from lumbago of rheumatic origin. Another point is that the pain is not influenced by changes of weather (*Am. Jrl. Med. Sciences*, August, 1914).

The conditions underlying the vascular crises are complex, and can only be touched on here. J. M. Wolfsohn (*Jrl. Am. Med. Assn.*, May 16th, 1914) gives the following table of adequate stimuli capable of producing effects through the visceral nervous system:

1. Electric stimuli.
2. Mechanical stimuli.
3. Chemical stimuli, including those of:
 - a. Exogenous origin.
 - b. Endogenous origin: (a) hormones, (b) internal secretions, (c) toxins, etc.
4. Emotions (probably ultimately chemical).

As regards vaso-motor equilibrium, we recognize that the blood supply to any part of the body is regulated, in accordance with its functional needs, by a delicate adjustment between the vertebral sympathetic with its ganglia and plexuses on the one hand, and the autonomic system (vagus and its congeners) on the other. Any derangement of this balance between these more or less antagonistic divisions of the vegetative nervous system predisposes to vascular phenomena such as we are considering. This balance has been shown by the studies of Eppinger, Falta, and others to be

upset in many pathological conditions, so that we may now recognize one class of subjects which is vago-tonic and another class which is sympathico-tonic, according to which factor is predominant. In some conditions, as Hirschfelder states, there occurs overaction, in others underaction of both systems simultaneously. Eppinger and Hess give the following table of tonic nerve effects: (quoted by Hirschfelder, "Diseases of the Heart," 1913):

	<i>Vago-tonic</i>	<i>Sympathico-tonic</i>
Pupil	contracted	dilated
Bladder	contracted	relaxed
Cardia	contracted	relaxed
Stomach	contracted	relaxed
Pulse	slow	accelerated
HCl secretion	increased	diminished
Glycosuria	diminished	increased

It is stated that those in whom there is overaction of the vagi show particularly marked effects from the administration of atropine and pilocarpine, whilst those with overaction of the sympathetic are very sensitive to adrenalin. Thus, as Abrams, of San Francisco, points out, symptoms or diseases (asthma, angina pectoris) due to increased vagus tone are accentuated by pilocarpine and ameliorated by adrenalin and atropine.

The *internal secretions* in this relation cannot be considered apart from the sympathetic nervous system. Von Anrep (*Jrl. of Physiology*, xlv, 5) from his recent experimental work concludes that every rise of blood pressure brought about by the agency of the nervous system involves the coöperation of the chemical mechanism represented by the suprarenal glands. Cannon and his associates have shown that fright, anger, asphyxia, and the strong stimulation of sensory nerves all cause (in animals) an increased secretion of epinephrin into the blood. "The adrenalin cells and the sympathetic nerves belong to a common system, whose first duty is that of sustaining the activities of the circulatory muscles" (T. R. Elliott, *Brit. Med. Jrl.*, June 27th, 1914).

Blackford and Sanford of the Mayo clinic have recently demonstrated the existence of a powerful depressor substance in the thyroids and blood serum from patients affected with exophthalmic goitre. Such data as these, day by day accumulating, impress on us the importance of the rôle played by the internal secretions in the correct regulation of the vascular mechanism. The subject is all too wide and inchoate to be more than lightly touched on; but

reference may be made to the recent work of Professor Barker, of Johns Hopkins, on the clinical significance of the autonomic nerves supplying the viscera, and their relations to the endocrine glands (CANADIAN MEDICAL JOURNAL, August, 1913); whilst to those who approach the subject with an open mind, the work of Charles Sajous, of Philadelphia, on the internal secretions, supplies much food for thought.

Toxins. These may be either exogenous (and it has been shown that pressor substances may arise from the decomposition of proteins in the intestine) or endogenous; whether their action on the circulatory system is direct or indirect is here immaterial.

It was shown by Gaskell that normally the acid products of metabolism dilate the peripheral vessels, thus providing for their own removal. The varied ways in which this delicate mechanism might be interfered with by metabolic poisons formed in the tissues with possible failure or reversal of this process at once suggest themselves.

As regards the condition of the vessel walls, and the general blood pressure, it appears to the writer that vascular crises may occur either in vessels that are clinically healthy, or that are obviously diseased, or that may reasonably be inferred to be diseased from the general data obtained on examination. The frequency of patchy or segmental changes suggests that this irregular distribution might be an added factor. Though a *general* hypertension is often preëxistent in many instances of angiospasm, the crises may occur in cases where the blood pressure is normal or even subnormal. The spasm may be more or less generalized; but is typically localized to a special area of arterial supply.

Sir William Osler found his cases of cerebral crises fall into these categories: (a) that of healthy individuals with rather high blood pressure, but without signs of arterial diseases; (b) that of persons with well marked arteriosclerosis, to whom the cerebral attacks came without warning—indeed as a “signal symptom;” and (c) that of those with advanced sclerosis and cerebral changes, manifested in diverse ways. Most of Sir William’s cases have fallen into the second group. In the writer’s opinion it would defy the very elect to say in some cases whether an added element of angiospasm be present in addition to permanent organic narrowing or not, since the latter would be adequate explanation of functional failure under excessive functional demands of any part or organ. Intermittence with recurrence at short intervals would seem to favour angiospasm. As to the relative part played by spasm and

dilatation in the so-called functional cases, let me remind you of S. Solis-Cohen's contentions as expressed in his original paper on vasomotor ataxia. He wrote, "*Ataxia*, rather than hypokinesia, because excessive vascular dilatation and excessive vascular constriction may be either spastic or paretic or *both* spastic and paretic, as dilator or constrictor nerves or both are affected; and, even in the extreme and opposite types of vasomotor ataxia, the phenomena, while always more or less paroxysmal, are neither exclusively those of dilatation nor exclusively those of constriction, but both abnormal dilatation and abnormal constriction are usually present in varying degrees in the same patient." "The influences under which these phenomena are displayed are, more especially, temperature—and cold more than heat, emotion, visceral and external reflex excitation, and the action of toxic agents, formed in the organism or introduced from without."

The prognosis and treatment of the vascular crises is naturally that of the underlying conditions, and requires no consideration in a paper of this scope.

CONCLUSIONS. 1. The vascular crises are probably of more frequent occurrence, and explain best a much greater variety of clinical signs and symptoms in so-called functional and in organic disease, than we have hitherto admitted.

2. A complex mechanism underlies their production, which an intensive study of the vegetative nervous system, and of the interactions of the ductless glands will in due time make more easily understood.

3. They give rise to phenomena which are transient, and tend to recurrence. These may be in the nature of pain, or of disorders of function—motor, sensory or secretory, singly or combined.

4. The newly developed pharmacologic and physical tests of the integrity of the vegetative nervous system, and the use of the nitrites will prove helpful in recognizing these conditions.

From a short series seen within the last few years, I select four illustrative cases of vascular crises.

CASE 1. Transient blindness in heart disease.

A lady, aged thirty-five, was first seen in 1910, suffering from mitral and aortic disease of long standing. The heart was much enlarged, and there had been many failures of compensation. Within the last four years the patient has suffered about thirty attacks of transient blindness in one eye, usually the right, occasionally the left. These "blind turns" have always occurred at night, awakening the patient suddenly from sleep with a sensation of

alarm, and of a "queer feeling" in the head. She then discovers, in the faintly lighted room, that she is more or less completely blind in one eye. The loss of vision varies in different attacks from a general dimness of the whole field in the affected eye to complete functional loss. Vision gradually returns in from two to ten minutes on an average. At first a central red glow of light appears, which gradually widens and pales in colour until the normal field of vision is regained. The recovery can always be hastened by the administration of a rapidly acting nitrite, and as soon as the pulse (which has been found small and firm on several occasions) has relaxed under the drug, any residual blurring of the vision field is promptly cleared up. On one occasion only was the writer able to observe the fundi during the brief period of unilateral blindness. The right fundus was markedly pale and blanched as compared with the left, and the branches of the retinal arteries that could be hastily noted were narrowed and threadlike, contrasting strikingly with apparently normal vessels on the opposite side. As vision became normal the rosy hue of the fundus gradually returned, and soon assumed the same appearance as its fellow.

Similar cases with a more precise description of the phenomena have been recorded by Priestley Smith, Osler, R. Lundie, of Edinburgh, and other observers. In Lundie's case he observed the gradual return of the blood column into the constricted vessels by a series of peristaltic-like movements.

The patient here referred to has also suffered from other symptoms of which transient vascular spasm appears the most plausible explanation. Thus, at times the left hand and arm will feel numb and cold and will tingle; the hand may be felt to be colder than its fellow, and the radial artery has been noted to be temporarily smaller and more thready than the other. Nitroglycerine will promptly remove the symptoms. Again, the occasional headaches from which the patient suffers are characterized by a feeling of constriction in one or the other side of the head; they yield most promptly to vaso-dilators, and strongly suggest a localized spastic condition of the cerebral vessels as the underlying cause. Attacks of what may have been œsophagismus have been noted on two or three occasions. All these types of "vascular crises" tend to occur chiefly at or near the menstrual periods. The chronic congestion of the liver existent in this case, with probable impairment of its disintoxicating power, must be borne in mind when considering the underlying causes.

Such cases as the above are interesting because the fundus

oculi is the only place where we can see spasm of the arteries, associated with loss of function. They have afforded valuable evidence in favour of a definite vasomotor supply to the cerebral vessels, evidence confirmed by the work of Morison and of Gulland, although it is generally believed that the vasomotor control is a relatively feeble one. In this case the accessible vessels were apparently healthy. The usual systolic pressure was about 115 mm., but during one attack of numbness and tingling of the left arm with complaints of "tightness" in the head, the pressure was noted at 150 mm. in the left brachial. Prompt relief of symptoms, with the relaxation of the artery and fall of pressure under nitrites was obtained. For reports of similar cases in the literature reference may be made to Alfred E. Russell's Goulstonian Lectures, 1909.

CASE 2. Recurring transient hemiparesis and aphasia in an apparently healthy subject.

In 1909, a previously healthy man, aged forty, of excellent personal and family history, was seen in consultation two hours after the onset of the attack described. The immediate history was as follows; the previous afternoon he was exposed to cold and damp while curling, getting thoroughly chilled. On returning home he partook of a meal which included tinned fish, and retired to bed still chilly and out of sorts. He slept badly and did not feel properly warm all night; arising in the morning he was proceeding to dress, when in rapid succession he was seized with a right facial paralysis and paralysis of the right arm and leg. He got back to bed with difficulty only to discover he had lost the power of speech. Seen shortly afterwards by two physicians, he showed complete hemiparesis and aphasia. Whilst they were examining him the disability rapidly passed off, and he was able to speak and move his limbs; very shortly the loss of power returned, and his power of speech was again cut off. Again these phenomena recurred, and once more recovery rapidly took place, this time to be permanent. When seen by the writer there was little amiss to be noted. The right face was a little more flushed than the left, the skin over it a little warmer and moister, a condition which could also be traced on to the right upper trunk and right arm. The reflexes were normal on the left; also on the right with the single exception of the plantar, which was elicited with difficulty; normal flexor response on the left. The right radial felt fuller and softer than its fellow. Systolic blood pressure, R. 120 mm., L. 140. The man belonged to what the older physicians would have called the "bilious dia-

thesis." He was dark complexioned, and had been liable to attacks attributed to a sluggish liver. Slight constitutional hepatic insufficiency probably *was* present. No personal history of migraine, but his father suffered from migraine, and one brother had suffered from migraine (once with an accompanying hemianopia).

What had happened in this case? The most plausible sequence would seem to be as follows: chilling and exposure the preceding afternoon had caused peripheral constriction, driving the blood into the splanchnic pool. The typically risky type of evening meal loaded the portal vein with toxins, which the constitutionally defective liver was unable to handle and properly render non-toxic. Toxins passed through into the general circulation, and intermittent spasm of the middle cerebral artery or its branches took place as a result of the insult of the toxin-laden blood.

Four days after his seizure the patient suffered his first typical attack of left-sided migraine without any motor disorder. Regulation of diet, of the bowels, and general hygiene resulted in improved health, with no recurrence worth noting to date.

CASE 3. Angina abdominis.

A farmer, aged sixty, was seen in 1910 with Dr. H. Killam, of Kings Co., N.S. He had suffered for some time previously from slight anginoid attacks, characterized by a little dyspnoea on exertion, and slight oedema of the feet. Gradually there developed a little sense of constriction in the chest with some painful radiation to one or other arm. By the time the writer saw the case the symptoms had localized chiefly in the upper abdomen, viz., attacks of severe epigastric pain, in which the stomach was seen to be tensely distended, relief coming only after the forcible expulsion of large quantities of gas. A series of these violently painful gastric distensions and explosive eructations would occur, and then the symptoms would gradually die down for an indefinite time. In a typical attack orthopnoea, marked cyanosis, cold extremities and a small slow irregular pulse would be present. There was in these latter attacks little or no radiation of pain to chest or limbs. The pain was at its height as the stomach stood out in tense relief, and abated as the gas was noisily expelled, and the organ collapsed. On examination he was found to be a rather neurotic type of man, older than his years, in moderate condition. His arteries showed marked general sclerosis; systolic blood pressure 160; heart moderately enlarged downwards and to the left, sounds rather faint, clear, with some accentuation of the second aortic. There was rather exaggerated pulsation and definite tenderness over the abdominal

aorta high up. The stomach showed no obvious ptosis or enlargement. He could not eructate at will and the attacks were not necessarily induced by exertion.

Under the experimental trial of a rapidly acting nitrate, prompt relief of the succeeding attacks was secured where other remedies had failed. It was surmised that, although there was almost certainly a chronic myocarditis (past syphilis could probably be excluded), the most plausible explanation of the later fully developed attacks was sclerosis of the coeliac axis or its coronary branch, with a recurrent angiospasm. In this way an intermittent ischæmia of the stomach with paralytic gas distension might be produced. The tender aorta, the marked degeneration of all the accessible vessels, and the intermittent painful distension, confined quite definitely to the stomach, would thus be explained. Treatment by nitrites and iodides, chiefly the former, resulted in steady improvement. The patient remains fairly well and comfortable within reasonable limitations.

In two very similar cases reported by Baris and Colombe (*Bul. Soc. Méd. des Hopitaux*, January 31st, 1913) post-mortem examination revealed a partial stenosis of the origin of the coeliac axis due to a patch of atheroma. They believe such cases support the view that temporary ischæmia is responsible for certain attacks of abdominal pain in the manner of intermittent claudication. In the course of the discussion of Sir Lauder Brunton's paper on angina abdominis, (*Proc. Roy. Soc. Med.*, April, 1912) one speaker narrated the case of a woman who had suffered from similar pains, and who finally died with acute neurosis of the pancreas, associated with extreme arteriosclerosis of the pancreatic artery.

CASE 4. "Fainting fits"—Hypotensive crises (Pal).

A young woman of twenty-one was seen in 1911 for so-called fainting fits, which had occurred many times during the preceding few years. She was apt to "faint," especially on rising in the morning or on suddenly assuming the erect position. On the other hand she could dance and play tennis without any threatenings or discomfort. Consciousness was never completely lost when she fell or sank down in these attacks, for as soon as the head was lowered she began to recover. On examination she was found to be a strongly built girl nearly six feet tall, with an even disproportionately long neck and body. The anæmias, mitral disease, *petit mal* and hysteria could be definitely excluded. There was a moderate ptosis of the right kidney. The blood pressure, recumbent, was 100 mm. systolic. On directing the patient to stand erect she

promptly turned pale, complained of faintness, and would have fallen without support. Within two or three minutes the blood pressure instead of rising had fallen to 80 mm. systolic. A firm abdominal bandage did away with these symptoms on repetition of this manœuvre. Obviously the splanchnic vasomotor control was inadequate, and the defect was accentuated by the very long blood column to be supported between the heart and brain, temporary cerebral anæmia resulting whenever she stood up suddenly after rest. According to Alfred Russell, two factors only are to be considered in such a case—cardiac inhibition and splanchnic dilatation. Sometimes both of these are operative, but splanchnic dilatation replacing normal constriction is here an adequate explanation. A properly fitted abdominal corset and vaso-constrictors, e.g., strychnia and ergot, resulted in marked amelioration of the symptoms.

PAROXYSMAL TACHYCARDIA

WITH A REVIEW OF FOUR CASES

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THE symptoms characteristic of paroxysmal tachycardia are becoming more and more frequently recognized and those phenomena hitherto rarely described are now classified and given their proper place among the disturbances of cardiac function, to a better knowledge of which experimental and clinical observations are continually contributing.

It has occurred to me that a record of a clinical experience of four cases illustrative of this comparatively rare condition might be of interest.

CASE 1. Several years ago a patient consulted me for occasional attacks of weakness setting in suddenly with a peculiar sensation in the region of the heart. Her appearance was that of one many years older than the stated age. While scarcely sixty she looked seventy or even more. The interest of the condition centred about the heart, the rate of which during an attack was 180, with neither dyspnoea nor cyanosis. The pulsations were regular; the area of cardiac dulness was normal; the sounds clear, and no murmurs were heard. It was learned at the first visit that the patient had already experienced several such attacks during the past three years. The occasion of the onset of the attacks was unknown. The duration varied from a few hours to two days. The attacks ceased suddenly a better feeling following immediately upon a "thud" or "jolt" felt in the cardiac region. When seen on the following morning the patient was much improved, the pulse rate was 78, the rhythm regular and sounds normal.

For three years I was permitted to follow her case. The paroxysms occurred irregularly, in the intervals of which she was very well indeed, able to go about quietly without dyspnoea. The final attack, quite like the others in its onset, was protracted, dyspnoea and cyanosis appeared, and other signs of cardiac failure

with albuminuria for the first time supervened. The heart rate was 180 to 200 per minute for a few days, then its action became very weak and somewhat irregular and death ensued.

Another case was that of a young married woman aged twenty-eight years, who was in her final attack when seen with Dr. Tilley, of Ottawa. She gave the history of recurring paroxysms for several years, coming on suddenly without warning and stopping as suddenly. The patient's heart was considered normal in the interval. The attacks lasted from a few hours to one day. The pulse ran 160 and upwards. Her last seizure seemed to be due to over-exertion. She was a woman of small stature and on a hot day had carried a block of ice and lifted it into an ice chest, the top of which was as high as her shoulders. After four days she succumbed with signs of cardiac failure and exhaustion.

The third case was that of a lady of eighty-six years who had suffered for twenty-five years from attacks of "rapid beating of the heart." Overeating seemed to bring them on. The intervals of these attacks were at first often as long as several months. Then they became shorter—a few weeks or so. During the last year of her life they recurred about every three weeks. During the month preceding death she failed very much and "died in her sleep" after several daily recurrences of the tachycardia and after œdema had supervened.

The fourth case was that of a man aged thirty-one, who was admitted to the Royal Victoria Hospital on November 25th, 1913, complaining of palpitation of the heart, vomiting and weakness.

He gave a history of having had measles and whooping cough in childhood, and at the age of twenty-nine he was confined to his bed for ten weeks, a sufferer with acute rheumatic fever. Early in this illness the patient experienced an attack of palpitation lasting for a few days. Thereafter he enjoyed nearly two years of freedom from heart symptoms until the onset of the present illness.

About the end of October he sought advice for the relief of headache and slight cough. He was told he had "congestion of the lungs" and was sent to bed. While in bed brief dimness of vision preceded an attack of palpitation which lasted two days. After a week of convalescence the patient returned to his work in the Canadian Pacific Railway store rooms where his duties compelled him to do a great deal of lifting. He worked five days, and on the evening of November 16th, while stooping, he experienced momentary blindness and palpitation. He became so ill that he was unable to go about.

When first seen on the ninth day of his illness, the striking features of his case were the intense general cyanosis, the fulness of the cervical veins without visible pulsation, and the rapidity of the heart beat—160 to 180. There was no œdema. He complained of tightness across the chest and dyspnoea was marked on exertion. He was nauseated and often coughed and vomited up blood-stained fluid. Later, nausea and vomiting were distressing. The liver was enlarged and tender. The urine contained a trace of albumin with a few granular and hyaline casts. The lung areas gave few signs of any abnormal condition save a few moist râles at the bases, especially on the right side. The heart was somewhat enlarged to the left. The sounds clearly heard anywhere over the thorax were singularly regular and free of murmurs. The patient's condition did not improve. The pulse showed a tendency to increased rate with diminished volume until on November 27th an accurate count at the wrist was impossible. On this date œdema of feet was first noticed.

On November 30th, the patient was very restless and much distressed with dyspnoea and precordial pain. There was dulness over both bases, more marked on the left, and viscid bloody sputum was expectorated in considerable quantity. The heart continued regular when last auscultated fifty minutes before death. The patient died on the evening of November 30th, after an illness of about one month. Death was manifestly the result of heart failure gradual and progressive.

A passage from the history of this patient is helpful in explaining the terminal events: As far back as he can remember he was the subject of attacks of palpitation of the heart. The onset was always sudden, usually when the patient was at work. "A tremendous thump" followed by a "fluttering sensation" marked the onset, or this sensation would be replaced by "everything about the patient turning black for a few seconds with staggering" followed by the fluttering as described above. One or the other group of sensations signalled the onset, but never a combination of these.

He never lost consciousness with an attack. Vomiting was often present even at the onset and persisted throughout. The onset was usually determined by fatigue, transient illness or heavy meals. It is remarkable that the patient usually continued at his work. The duration varied from six hours to three days, while the frequency increased with his age, yet from 1900 to 1906 while the patient was in the army he did not experience a single attack. With but one exception all the attacks set in during the day time.

The patient averred that the attack left him "as suddenly as it appeared." After a "thump" felt in the region of the heart, all his discomfort was over and save for a sense of weakness he was fully restored.

In the light of the very clear description of recurring attacks so much alike it seemed that this case should be classed as one of paroxysmal tachycardia. The history of acute rheumatic fever and the fact that the patient frequently spat blood during a seizure suggested one of the most common conditions associated with such attacks, namely, mitral stenosis and myocardial degeneration. Multiple pulmonary infarction was believed to be present also. Autopsy findings bore out this diagnosis. There was considerable fibrosis of the heart muscle, while the bundle of His was uninvolved.

It is a matter of regret that neither sphygmographic nor cardiographic tracings were made on three of the cases. The conditions under which they were observed made this very difficult. The tracing of our fourth case showed the pulse rate regular, and, when taken, of the rate of 170.

The diagnosis may be made in the greater number of such cases by a careful history and an observation of the circulation in the ordinary way. An electrocardiograph or sphygmograph aids in determining obscure cases and also in deciding between the types which may be present.

The following clinical features, by means of which diagnosis is made, already mentioned in our case reports may be repeated for emphasis:

- (a) The sudden onset—in but a few seconds the rate of the heart beat may be double the normal rate, or even 245 (Hutchison).
- (b) The regular rhythm of the pulse.
- (c) The sudden offset—the pulse rate becoming normal in a few seconds—and if there has been discomfort about the chest, tightness, slight dyspnoea, etc., relief comes quite as suddenly from these.

One must not forget that symptoms may be referred to other organs, e.g., the stomach or the lungs, as illustrated by one of our cases; possibly the peritoneum too may be suspected as diseased, should vomiting and collapse ensue. The heart in acute alcoholism and the heart of goitrous patients often show tachycardia. The history helps very much in the diagnosis of these cases. Auricular fibrillation may be distinguished by the irregularity and the absence of the *a* wave in the tracing.

The onset is attributable to a variety of causes—emotion, posture, stooping, an effort in an unusual position, e.g., carrying ice and lifting it into a refrigerator, overeating, “hacking” to clear the throat, as described in one of Dr. Moffat’s case reports.

Such causes are effective, however, only under abnormal conditions of the heart muscle or of the cardiac nerves. Impulses of extrinsic origin arising from a single site originate the attack and, setting the pace, control for a shorter or longer period the cardiac rhythm. Lewis maintains that the first paroxysmal beat is premature and that in the offset there is a characteristic “post-paroxysmal” pause. The pathology of this comparatively rare condition is not yet made out. Experimentally such a regular rapid rate may be induced in hearts by repeated rapid faradization (Hirschfelder) or by tying the descending branch of the coronary artery (Lewis).

Isolated premature contractions occur, explained from the point of view of pathological or heterogenetic impulses. From this to repeated impulses from the same foci is another step, and should several extrinsic foci become active the heart responds irregularly to pathological impulses, and fibrillation is the condition described. There seems but little doubt that premature heart beats are determined by an irritable cardiac muscle—a weak muscle, or an overworked muscle, or a muscle under the influence of some poison. It is highly probable too that several factors may be active in bringing about this result.

In most instances the theory of altered nutrition of the heart muscle is called upon to explain the alteration of rhythm. On the other hand is it possible that in paroxysmal tachycardia a sensitization of the tissues in the cardiac mechanism takes place in a manner similar to that accounting for asthmatic seizures,—an anaphylaxis under another form—the recurrences in part by reason of the disturbances in circulation inducing the condition of myocardial degeneration, dilatation and death? Or again, is the cause to be found in a poison produced under certain conditions in the body which, acting directly upon the heart muscle like poisonous doses of aconite, induces such great acceleration and eventually fibrillation and death? With the increase of our knowledge of physiological chemistry, disturbances of metabolism are regarded more and more as accountable for disturbances of function. Epilepsy, tetany, spasmophilia may be mentioned as illustrations of diseases closely related with intervals of practically a normal condition. These three diseases are marked by suddenness of onset, spasms and

violent motor disturbances. It would seem possible that a natural or induced irritability of the cardiac muscle may respond to the action of certain toxic substances so that the phenomena of paroxysmal tachycardia are induced.

TREATMENT. The treatment of this condition must remain unsettled until chance discovers a remedy or research directs the measures of relief based upon a knowledge of the underlying causes now not understood. Attacks may be cut short by pressure upon the vagus nerve of the neck, by the application of cold to the chest, by pressure over the præcordium (Thorne), by the use of digitalin or strophanthin, or bleeding may afford relief in those cases where dilatation is advanced. Again, under apparently identical conditions in the same or other patients these agents are useless. To control restlessness and relieve the distress morphine is often essential.

While the cases narrated in this paper have terminated fatally, one patient seems to have been helped by taking large doses of *nux vomica*. At all events the interval between attacks was lengthened during treatment. Whilst the attacks were brief they seemed trifling; but with short intervals and protracted tachycardia, to say nothing of advancing age, the gravity increased. The seriousness of the attack, however, is in proportion to the duration regardless of age. While this statement is of general application, a case of paroxysmal tachycardia reported by Turnbull* is a rare exception, remarkable for recovery after a protracted course of five and a half months in a man aged seventy-four years.

The heart muscle is often found degenerated in cases of paroxysmal tachycardia, and mitral stenosis and myocardial degeneration are found in a high percentage of cases. The treatment resolves itself therefore in many cases into the treatment of such conditions after the normal rate is approached or reached.

* "Heart," Vol. iii, p. 89.

RECENT INVESTIGATIONS ON THE SEMI-CIRCULAR CANALS AND THEIR CLINICAL APPLICATIONS

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IT is a notable fact that for centuries, physicians have had a very imperfect knowledge of the function of the semicircular canals. A meshwork of theories was built up around this subject, unsound scientifically and inapplicable for clinical purposes. Indeed, until very recent date, the vestibular apparatus has been the field of a great deal of speculation. Professional writers on otology either copied the many mistaken theories of their predecessors, or else omitted the subject entirely.

In tracing very briefly the history of the gradual advance of our knowledge on this important subject through the ages, we find that the Greeks of old recognized and described vertigo. Then centuries elapsed without further progress until a new era was inaugurated by the physiologist Flourens, who was the first to carry out a series of experiments on the semicircular canals of different animals in order to establish their function. He cut through the canals in different species, investigated the resulting dizziness, and incorporated his findings in a book published in Paris in 1842, "*Récherches expérimentales sur les propriétés du système nerveux.*" Now while Flourens was experimenting on animals, Purkinje was at the same time carrying out similar physiological experiments in the human. He was the first to carry out the turning experiment in man, and observed during the attack of dizziness, which followed the rotation, a peculiar to-and-fro movement of the eye-balls, so that to him belongs the credit of being the first to discover nystagmus. Years again elapsed, when the study of the labyrinthine canals received a fresh impetus from an aurist. In 1861, Ménière published his famous article in which he states that it is highly probable that the vertigo which he has so frequently

Read at the annual meeting of the Canadian Medical Association, St. John N.B., July, 1914.

observed in affections of the ear, is due to disease of the semicircular canals. He based his conclusions on clinical experience. Briefly, his arguments are as follows: Deafness and dizziness are frequently the only complaints of a person suffering from ear disease, and since the deafness is due to an affection of the cochlea, it is very probable that the dizziness has its origin in some pathological condition of the semicircular canals. His theory was enthusiastically received. Unfortunately, he died the same year. The next advance was made by the German physiologist, Goltz, in 1870, whose conclusions were that the physiological function of the canals is to preserve equilibrium, for when the canals are destroyed, our equilibrium is disturbed. This was shortly afterwards independently corroborated by Crum Brown, of Boston, Bruer, of Vienna, and Mach, of Prague.

Although a considerable amount of experimental and practical work was being done by men like the physiologist Ewald, of Strassburg, the American psychologist, James, and Jansen, the Berlin otologist, who was the first to operate on suppurative diseases of the semicircular canals, still the clinical side remained undeveloped. This was mainly due to the fact that there was no method at their command by which they could investigate a unilateral affection of the semicircular canals, because the turning test, which was the one employed, irritated the semicircular canals on both sides, and the galvanic experiment gave uncertain and unreliable results, as it still does to-day.

All this was changed when Robert Bárány made his epoch-making discovery of the caloric reaction in 1905. The history of it is quite interesting. As a young assistant of Politzer's in the Allgemeine Krankenhaus in Vienna, Bárány was one day syringing an ear with very cold water, when the patient began complaining of dizziness, and on observing the eyes, he noticed there was a combined rotary and horizontal nystagmus away from the syringed ear. Thinking that the extreme temperature of the water was possibly responsible for the dizziness, he ordered warmer water, and this time the water was very hot. He syringed the same ear, the patient made similar complaints, and again observing the eyes, he noticed much to his surprise, an identical movement but towards the irrigated ear. He then syringed the ear with water of body temperature and obtained no reaction. At this moment, he recognized that it must be the temperature of the water which is responsible for the dizziness, and for the nystagmus—its character and direction.

So he proved, after examining hundreds of individuals of all ages, with normal and destroyed drums, but intact labyrinths, that the normal caloric reaction was obtainable in all these cases, i.e. in syringing an ear with water of body temperature, no nystagmus is produced, nor any other ill effects, as dizziness, disturbance of equilibrium, nausea or vomiting, while cold water produces in a short time, a nystagmus in the direction away from the irrigated ear, and hot water, similar nystagmus, but towards the same side. He further studied cases with pathological conditions of the internal ear and found that where the semicircular canals or vestibular nerve were destroyed by cholesteatoma, labyrinthitis, tumour, etc., the caloric reaction was absent on that side. Operation or post-mortem examination confirmed these findings. So he established that the caloric reaction enables us to make clinically a unilateral functional examination of the labyrinth.

Without entering into excessive theoretical detail, explaining how the caloric reaction is produced in the different canals and the different positions of the head, I would state that Bárány considers the labyrinth with its endolymph to behave like a vessel which is filled with water of body temperature. If one side is syringed with cold water, the fluid on that side is first cooled, and as its specific gravity thus becomes heavier, it falls to the bottom and the fluid on the other side must immediately rise; with hot water the exactly opposite movement occurs. The disturbance of the fluid produces irritation of the vestibular nerve endings in the cupula and impulses are in this way transmitted through the medulla to the nerves supplying the eye muscles, thus producing nystagmus.

The next advance in our knowledge of the vestibular nerve was also made by Bárány in 1909. Just at this time he was greatly impressed with Ramon y Cajal's statement in his recently published work, "Histology of the Nervous System," that the branches of the vestibular nerve form an extraordinarily large number of connexions with the cerebellum. Combining this knowledge with Bolk's conclusions that in the cerebellar hemispheres of man is the controlling influence over the muscles of the extremities, and in the vermis the controlling influence over the trunk muscles, he set about to devise a method whereby, after irritation of the vestibular nerve, he should be able to examine the extremities. He soon found one suggested by the Graefe test used in diagnosing paralyses of eye muscles, in which the method of examination is as follows: An object is placed before the patient's suspected eye (the other eye being kept closed) and he is directed to touch the

object with his finger, first with the suspected eye open and then with it also closed. The normal invariably touches it correctly, but if there is paralysis present, there will be a deviation of the finger from the object. On this principle Bárány developed his *Zeigever-such* or pointing reaction.

Before describing the pointing test as worked out by Bárány, let us briefly trace the peripheral and central connexions of the vestibular nerve in the light of our present knowledge, based on the latest anatomical and clinical investigations. The auditory nerve has two main divisions, a ventral vestibular and a dorsal cochlear. As we are mainly interested in the vestibular nerve, we will follow it from the static labyrinth to its furthest connexions. In the labyrinth its sensory nerve endings go to the ampullæ of the three semicircular canals and to the macula utriculi and sacculi, then we meet the vestibular ganglion just prior to the exit of the nerve from the internal auditory meatus into the cranial cavity. Here it traverses the cerebello-pontine angle, enters the medulla, where it divides in the form of a Y (according to Cajal) into ascending and descending branches. In the medulla, the vestibular fibres are connected by collaterals with Bechterew's and Deiter's nucleus, and through these latter all-important centres, all the connexions are made for the nystagmus reflex and the reaction movements of the body and extremities. Now in tracing the pathway of the nystagmus reflex we find that some of the ascending branches from Deiter's nucleus join the posterior longitudinal bundle and reach the nucleus of the sixth nerve on the same side and the nuclei of the third and fourth nerves on the opposite side, thus establishing the connexions with the nerves supplying the eye muscles, and the nystagmus reflex is complete. The pathway of the reaction movement of the body is made by some other fibres passing from Deiter's nucleus to the cortex of the vermis of the cerebellum, then to the nucleus tecti, and by the descending fibres going to the anterior horn cells of the spinal cord from where branches are sent to the muscles of the body, and thus the reaction movements of the body are formed. There is still a third set of fibres which pass from Deiter's nucleus to the cortex of the cerebellar hemispheres and from here to the nucleus dentatus, the red nucleus, Monakow's tract, lateral columns of the cord, and to the anterior horn cells of the spinal cord on the same side. This is the pathway for the reaction movements of the extremities.

Now it is the function of the static labyrinth to acquaint us with our position in space and with changes in that position, and

normally this fine mechanism is in perfect balance, but if a powerful impulse is produced in the semicircular canals, mechanically by the caloric, turning, galvanic or fistula test, the central check is abolished, the balance upset, and the result of this loss of control is disturbed equilibrium in the eye muscles—nystagmus; and the muscles of the body and extremities—the reaction movements. If the strong impulse radiates from the central vestibular nuclei in the floor of the fourth ventricle (medulla) to the vagus nuclei, we get nausea and vomiting.

Now Bárány's reaction tests for the shoulder joint are as follows: The patient, in the sitting posture and with both eyes closed or blindfolded, stretches out his arm on a level with the shoulder, and with his index finger (the palmar surface directed downward) is made to touch the examiner's, which of course is held in a fixed position. He then either moves the arm vertically or horizontally, and the normal invariably touches the examiner's finger correctly, except that there may be perhaps a slight insignificant deviation at first which is readily corrected. As it is essential that the patient should not be aware of the error he makes, otherwise he can easily correct it, the examiner should always touch the patient's finger with his own, if there is an error, and never talk in his presence except in a language which he does not understand.

We will now briefly mention how the tests in the other joints are carried out. In examining the wrist joint, the patient's forearm rests on the back of a chair, and then the patient carries out similar movements to those described above, but only in the vertical plane, with palmar surface first down and then up. To test the head and trunk, Bárány uses his pointing instrument. It consists of a metal rod ten inches long, moveable up or down, and with a band which fastens it around patient's head. With eyes closed and arms folded and the pointer in the horizontal position, the patient raises and lowers his head to the fixed examiner's finger, and also turns his head to the side and back again to the median line. In this way errors are detected in the vertical and horizontal planes. Then the pointer of the instrument is placed vertically. The head is lowered and raised and the pointer touches the examiner's finger held above it. In this way one detects errors in the frontal plane. With the same instrument but with the pointer vertical, the trunk movements are now examined. The patient with arms folded, sitting on the edge of the chair, carries out movements by bending the body forward and also from side to side, the pointer touching the examiner's finger held above it, and so errors in pointing are detected.

Bárány's theoretical explanation of cerebellar localizations is that there exist in the cerebellar cortex certain definite centres which exert upon each particular joint or its controlling group of muscles a pull or tonus in a definite and constant direction. Thus there must be at least four centres for controlling the movements of every joint, for example, an upward and downward, and an inward and outward movement for each shoulder joint, which would enable the normal individual to move the arm correctly in the vertical and horizontal planes without the aid of sight. Just as in the motor area of the cerebrum there are centres presiding over the voluntary movements of each small muscle group, so with the cerebellum, there are separate centres for different joints, e.g., the shoulder, elbow, wrist, hip, knee, ankle, neck, etc. These various cerebellar centres normally act harmoniously and coördinate the movements of the various joints. Let us consider for a moment the right and left centre of the shoulder joint. These act like a pair of taut reins between which the arm moves, and by the tone or tension which it imparts to the muscles, the arm always moves exactly up or down in the same line and touches the finger correctly, i.e., there is normal pointing. But suppose the left rein is pulled more tightly than the right, then the arm must naturally deviate to the left and there is a pointing error to the left. We can produce a stronger pull on the left rein in the normal individual by syringing the left ear with cold water and then there will be a pointing error to the left as long as the nystagmus is to the right. This pointing error of both arms to the left can only come during a nystagmus to the right, by the innervation of the outward centre of the left arm in the left cerebellar hemisphere and the inward centre of the right arm in the right cerebellar hemisphere, so that both arms now deviate to the left. We also can produce the same pointing error to the left if we cut through or paralyze the right rein so that the left one only acts. Bárány's theory of cerebellar function seems to be well established, and his localizations have been recognized by no less a body than the German Neurological Society who at their annual meeting in Breslau in 1913, awarded him the Erb medal for his researches on the cerebellum.

So far, most of our clinical knowledge has been obtained from cerebellar abscesses of otitic origin, and the lesions found have been on the cerebellar surface extending from the sigmoid sinus forward along the posterior aspect of the petrous bone to the internal auditory meatus. Of the four centres localized, by far the most important from the diagnostic standpoint, and the most commonly

involved in otitic cerebellar abscesses are the two centres exerting inward tonus upon the wrist and shoulder movements, both situated very close together in the lobus biventer—for the wrist joint, in the anterior end of the biventer lobe near the flocculus and behind the inner meatus, and for the shoulder joint, about 10 mm. behind the former. The outward centre of the shoulder joint has been localized at the margin of the hemisphere between the semilunar superior and inferior lobes, and the downward centres on the posterior and inner corner between superior and inferior semilunar lobes.

The evidence of the correct localization of the inward centres of the wrist and shoulder joints are based on the facts that cerebellar abscesses and tumours in this situation frequently produce marked outward deviation of both arm and wrist. Further corroborative evidence is adduced by the characteristic deviations following surgical injuries of the cerebellar hemispheres during operations and also by the cooling experiment. As an example, I will refer to a case operated on in the Vienna General Hospital, in which the cerebellar dura in front of the sigmoid sinus was freely exposed. The knife in the surgeon's hand accidentally slipped and entered the biventer lobe near the flocculus, and when the patient was examined on recovery from the anæsthetic, the wrist corresponding to the side of the cerebellum injured deviated strongly outwards; the other hand and arm, however, pointed correctly. In another case with suspected cerebellar abscess, but no focal symptoms, exploratory puncture was made through the biventer lobe of both cerebellar hemispheres, at the point located as the inward tonus centre for the shoulder joint. After recovery from the anæsthetic, both arms showed marked characteristic deviation outward.

Bárány further proved this physiologically by a modified Trendelenburg's method. Certain cerebellar operations necessitate the extensive removal of bone from this region and, when healed, leave only a thin epidermal covering of the cerebellum. Now Bárány experimented on such cases, and found that by cooling this area with ethyl chloride for five minutes, he temporarily paralyzed the centres for inward tonus of the arm and obtained the pointing error outwards, just as long as the cooling process continued. Two or three minutes after discontinuing the cooling the reactions were normal again. This not only corroborated the correct localization of the centres of the cerebellum, but also showed that the deviation was due to cerebellar innervation.

As regards the vermis of the cerebellum, apart from our knowledge that it has to do with ataxia, recognized as far back as 1876 by Nothnagel, there has been no definite localization of centres there. In peripheral disease of the vestibular apparatus, we also get ataxia, but in this case the direction of falling is opposite to the direction of the nystagmus, and the falling also changes with the position of the head. But if the changing of the position of the head produces no changes in the direction of the falling, then the ataxia is intracranial, cerebellar, or medullary. In these cases there may be no dizziness or vomiting, which are usually marked in the disease of the vestibular apparatus.

Examination of the Function of the Cerebellum

The examination of the function of the cerebellum is carried out either by the caloric, turning, or the galvanic reaction. In most cases all of the practical tests can be made and the information obtained in a few minutes by utilizing the caloric reaction. First, we should examine both sides for any spontaneous error of deviation, and for most practical purposes, the shoulder-joint test would be sufficient indication. We syringe, say, the right ear with cold water, and obtain a rotary and horizontal nystagmus to the left, the normal individual on attempting to stand with his feet together and eyes closed tends to fall to the right, and if we examine by the pointing test while the nystagmus is still active, there will be a pointing error of both arms to the right, describing a V-shaped movement. This is the normal. The rule is that the falling and pointing is in the opposite direction to the induced nystagmus. Now let us say, for instance, there is an abscess in the right cerebellar hemisphere which has destroyed the centre for the movement inward of the right shoulder. On examination we get a spontaneous error of the right arm outwards, that is to the right, while the left arm points correctly. Now if we produce, experimentally, a strong nystagmus to the right (through syringing the left ear with cold water, or the right one with hot water) a person with normal cerebellar centres must point both arms to the left, but if there is an abscess in the right cerebellum, only the left arm will show a pointing error to the left, while the right arm remains unchanged, still pointing outwards, that is, to the right, or it may point correctly, but there will be no deviation to the left.

These two functional changes, namely, the spontaneous outward deviation of the right arm and its failure to respond to the

vestibular irritation, give the diagnosis of right cerebellar abscess. Such cases were reported by Bárány, Brühl and others, and were confirmed by operation. After the abscess is evacuated, pressure is relieved, and the centre regains, in part, its control. In a few days the spontaneous error—pointing outwards of the right arm—disappears, but when subjected to vestibular irritation, the right arm produces no pointing error. In some cases a permanent functional change occurs.

Again as before, we syringe the right ear with cold water and produce a nystagmus to the left, and the pointing error in both arms is to the right. This we can change, by bending the head 90° forward, to a nystagmus to the right, and the pointing in both arms and the falling then change to the left. Furthermore, in case of nystagmus to the left, by turning the head to the right where it is held in a fixed position by an assistant, we get a vertical nystagmus downwards, a pointing error in both arms upwards and a falling backwards. So also by turning the head to the left, we get vertical nystagmus upwards, a deviation downwards in both arms, and a falling forwards. The upward reactions require stronger irritation than the downward. These are the normal reactions occurring promptly in normal individuals. If the caloric test gives clear normal reaction, then it is not necessary to use the turning, but in all doubtful cases, the turning test should be used as a control to the caloric.

Value of the Pointing Reaction

Bárány said that he never saw a normal individual with the pointing reaction in the arm completely gone. It is different, however, with other joints. In the elbow, wrist, hip and head, it is frequently absent in the normal. As the inward reactions in the normal are always weaker, so both inward reactions may be absent while the outward are still demonstrable. One should draw no conclusions from the complete absence of most of the reactions or symmetrical absence of the reactions inwards, but asymmetrical reaction should always be considered as pathological. While working with Bárány, I have seen cases with loss of sensation in the arms, still giving the normal pointing reaction after experimental nystagmus is produced. Physiologically, the test is universally accepted, but our knowledge of its pathological significance is, of course, still imperfect, owing to its very recent discovery.

The pointing reaction is a very valuable asset in the diagnosis of cerebellar lesions, especially otitic abscesses, tumour and trau-

matic conditions, as shown by Bárány, Brühl and others. Its presence is an important factor, but its absence does not justify the conclusion that the cerebellum is not diseased. It is quite evident that before obtaining pathological signs, there must be very marked irritation or destruction of these centres. For instance, slow growing tubercles, cysts and gliomas, may only exert partial pressure on these areas, and it may be impossible to diagnose these conditions with certainty. On the other hand, brain tumours, when associated with hydrocephalus, may exert such pressure on the posterior fossa as to give pointing errors and to make the diagnosis extremely difficult. Ruttin reported a case of a man who on post-mortem examination showed a small abscess in the cerebellar cortex, while during life his pointing was normal. Frey reported at a meeting of the Vienna Otological Society in the autumn of 1913, at which I was present, a case of hysteria which gave a point-error, and at operation, of course, no disease of the cerebellum was found. Neumann reported three cases of lues, with transitory deviation of the pointing reaction. There was no spontaneous error present, and when experimental nystagmus was produced, there was still no error. Later the reactions became normal. One should only assume that there is destruction of a part of the cerebellum where repeated examinations give a spontaneous error of deviation and experimentally show an absence of the reaction in the opposite direction. The definitely localized centres are in the semilunar, superior, and inferior lobes and in the biventer.

A COURSE of lectures in sanitary science and hygiene is being given by the Royal Sanitary Institute at Vancouver. The purpose of these lectures is to train men and women so that, if martial law were declared, they would be able to assist the military authorities in keeping the city and refugee camps in a healthy and sanitary condition.

THE MEDICAL PROFESSION OF ALBERTA AND THE DEFENCE OF THE COUNTRY

BY MAJOR LORNE DRUM, M.D., D.P.H.

Permanent Army Medical Corps, Ottawa

LET us suppose that an enemy holding the naval supremacy of the Pacific seizes Vancouver Island and lands on the coast. What would happen? Alberta would become a frontier province with the mountains for a rampart; and the militia of the district would be mobilized in one or more convenient areas of concentration. But even before the troops would begin to pour westwards over the mountain passes, the toll that sickness, minor casualties and accidental injuries exact on every army would begin to show its effects in the usual proportion of non-effectives left behind under medical charge. Again, on arrival at the frontier and before a shot had been heard a similar crop would be ready for shipment back; for sick men are an encumbrance and handicap to any army, and must not be kept at the front. Then the day of battle arrives and the firing line reaps its harvest and pays its penalty. The wounded lie where they fall. There is no help for them except that which can be afforded by those with them—their comrades, the medical officer of their regiments and the regimental stretcher bearers or first aid men placed at his disposal. Later on in the battle, as the area of conflict shifts, the regiments move on and the wounded are left behind with only such temporary aid and hasty relief accorded as time and circumstance may allow. The field medical unit—the field ambulance or cavalry field ambulance—now enters upon the scene and proceeds to collect, relieve, dress and temporarily shelter those casualties until they can be handed over to others for transportation back to the railroads, and back through the mountains, in train-loads to Calgary and other distributing points. The field ambulance cannot do this transportation work. It must hurry on after the firing line, collecting, relieving, feeding, placing in temporary shelters, and ever again hurrying on, keeping pace with the troops in front. Another organization must take up this duty of transportation and care for the wounded until it is effected. This is the work of the clearing

hospital organization, and there is no such unit in Alberta. Again, when at last the wounded arrive at the railways, cars have to be fitted up for their reception and a personnel provided either from the clearing hospital or elsewhere to nurse and care for them during their long trip through the mountains and across the prairie. As the ambulance train rolls along on its slow course homewards, opportunities occur as the train stops at various railway stations for an organized local personnel to provide hot food, fresh clothing and other comforts for the wounded, as well as a few hospital beds in readiness for patients too ill to journey any farther. These rest stations are most important, not only along the line of rail travel, but at the various points of destination where ambulance trains will have to wait for hours before the unloading of the wounded and their allotment to hospitals—stationary hospitals—may be effected.

These stationary hospitals would have to be improvised at convenient centres in the province, suitable buildings such as schools and factories being requisitioned. In this connexion it is doubtful whether the civilian hospitals of the province would be even partially available owing to the fact that the accommodation needed in them after the civilian demands had been supplied would be far too small for the purpose. Only their operating rooms, x-ray apparatus, etc., could be counted upon for continued service. The personnel to take charge of these stationary hospitals would also have to be organized, as at present there are none. But the story is not yet complete. The sick and disabled have arrived at a stationary hospital, possibly at Calgary. They have reached the zone of distribution. They must here be permanently treated and cared for until distributed to the best advantage. Some may never so recover as to be effective fighting men again, or may require such time to do so as to render such an eventuality tedious or even problematical. These must be shipped farther away from the line of activities, as soon as their condition permits. Congestion must be avoided, and the burden evenly distributed throughout the zone. So from this point of distribution new train-loads of non-effectives leave for suitable points at which other stationary and auxilliary hospitals, and even large general hospitals may be located. A general hospital, for instance, might well be located at Medicine Hat, to serve the stationary hospitals located at such distributing points as Calgary and Lethbridge. Again, around Calgary, Lethbridge, Edmonton and any other points of distribution, auxilliary hospitals would be organized at suitable places such as Lacombe, Red Deer,

Wetaskewin, High River, Pincher Creek, Macleod and other points, within easy reach by rail or road. Along these railways and roads other rest stations would be required. In this way, those disabled for long periods of time would be distributed over the province, leaving clear for further eventualities the medical resources in immediate touch with the area of active operations.

Again, we have the disabled who, after the final operation or work of repair has been completed, require little or no further medical care, but only rest until once more efficient. For these non-effectives convalescent depots must be improvised at which, under medical supervision, they await their early return to duty. Such depots could be established in connexion with the general hospital at Medicine Hat, and also at Banff and other suitable places. All these and other medical formations must be improvised on the outbreak of hostilities, as only those organizations which would be immediately required to accompany the fighting troops into the field on the call to arms, namely, the regimental medical personnel and the field medical units, are organized and trained during times of peace. Even these units are trained on a limited establishment and would have to be increased to more than double their peace strength on mobilization. The country cannot afford to do any more.

Now, how is it proposed to improvise these and other equally essential organizations? We depend upon the local medical profession and other medical resources of civil life for this work. The officers will be supplied from among the practitioners, the nursing sisters from among the trained nurses, and the rank and file—the subordinate staff, both men and women—from among those who have received instruction in first aid, home nursing and invalid cooking at such classes as are held by our *confreres* under the auspices of the St. John Ambulance and similar organizations. In order to properly prepare the medical profession for this national duty—their share in the defence of their country—every endeavour is made to encourage the licensed practitioners of Canada, who are British subjects, physically fit, and under the age limit, to become medical officers of the militia. Those so eligible may apply for and receive a commission in the Army Medical Corps. Once upon the regimental list of this Corps they receive training in the duties of a medical officer, and are taught the rôle, sphere of action and organization of the various military medical formations above enumerated. In this way it is hoped that in due time every medical man in Canada, with but few unavoidable exceptions, will be a

trained medical officer, ready, when the time comes—if not already detailed to the medical charge of a regiment, or to a field medical unit—to improvise, staff and equip these other medical organizations from clearing hospitals to convalescent depots. Similarly, the large numbers of nursing sisters required must be supplied from the trained nurses of the country; and, to this end, every trained nurse who is a British subject, and otherwise properly qualified, is eligible for appointment to the regimental list of the militia Nursing Sisters.

Then for the rank and file—the subordinate personnel, how are we going to supply the large number of trained people required to complete the existing field medical units up to war strength, and to staff the many medical formations described? This is a very important question. All Canadians between the ages of eighteen and sixty are liable for service on mobilization in varying degrees, and for this purpose they are divided into four classes. Those in the first class would be those first called out, and those in the fourth class, last. The rank and file required for the medical organizations would be selected from among those mobilized militia men who have not already received a military training during peace time in other branches of the service, and who hold certificates from civil sources in first aid, hospital duties, home nursing or invalid cooking. In this connexion it can readily be understood that the teaching work of such organizations as the St. John Ambulance Association is of great importance, and from the patriotic standpoint of national defence alone it should receive our every support. The more such classes are held the greater will be the supply of trained citizens available for our needs on mobilization. But a difficulty still exists. What about those citizens, so trained, who belong to classes not called out? These certificated people are scattered all over the country, but, once trained, soon pass out of touch with the civilian bodies by whom they were taught. In the hour of national emergency the services of these people would largely be lost unless some scheme were adopted to keep track of them, and to utilize their voluntary services. To overcome this difficulty, a Voluntary Aid Committee is being appointed in each military division and district, whose duty it is to organize these trained individuals into Voluntary Aid Detachments—both men and women detachments—which will be duly registered, numbered, and annually inspected by the militia medical authorities. These detachments will be available on the outbreak of hostilities for duty in their home localities, if situated in the zone of distribution, to organize auxilliary

hospitals, rest stations, etc.; or when supported from private resources, such as by the Canadian Red Cross Society, to staff other medical organizations, such as ambulance trains and hospitals away from home. For further information as to the formation, training and registration of these detachments, I would like to refer you to the pamphlet on this subject issued by the Militia Department and entitled, "The Organization of Voluntary Medical Aid in Canada."

In conclusion, this is but a brief outline of the method by which it is proposed on the outbreak of a war of national defence to extend the present incomplete militia medical organization into a complete medical service capable of coping with all the essential details of a rapid evacuation and an efficient care and distribution of the casualties which will begin accumulating before even a shot is fired. Whether this extension may be accomplished readily and promptly will depend largely upon the way in which the medical profession in civil life understands and is prepared to carry out its share. Otherwise, all unorganized and individual effort—no matter how fervid and patriotic—can only result in hopeless confusion. In the absence of any proper medical arrangements behind the fighting troops, the armies will become overburdened, clogged and weakened by the pressure of sick and wounded; and not only will much unnecessary suffering and mortality ensue, but the fate of the country may be decided—like that of the Balkan armies before the Tchataldja lines—not by the strength of the enemy, but by the weakness of its own medical service. Therefore, the importance of a well organized and complete medical service in the day of national emergency cannot be overestimated, and the main factor in the provision of such a service in this country is the efficient and active coöperation of the medical profession as a whole. It is their share in the duty of national defence.

NATIONAL DEFENCE AND THE MEDICAL PROFESSION

BY S. W. HEWETSON, M.D.

Major, Army Medical Corps, Calgary

WE in Canada are very fortunately situated, for while the older countries are living in a state of armed neutrality, and while their inhabitants are struggling under the burden of an excessive tax for the maintenance of their armies and navies, we have shirked our responsibilities, and instead of aiding the Mother Country we have devoted all our time, all our energies, and all our revenues towards personal and national aggrandizement. Sooner or later, and, if we wish to maintain—I am tempted almost to say *regain*—our national self-respect, it will have to be soon, we will have to take up our share of the burden, and the first step towards this end is the establishment of a sufficient force to protect ourselves from outside attack. With a population of eight millions, should the fate of the Empire be at stake, surely Canada should be able to put a quarter of a million men in the field—approximately three men for every hundred inhabitants. This would mean a force of about fifteen thousand for Alberta, for the medical care of which ninety surgeons would be required.

“It is the patriotic duty of every able-bodied practitioner in medicine to so prepare himself in times of peace that should the nation ever call on him for service in the field he will be prepared to render valuable services, wherever placed, in a medical capacity. Experience has shown that the civilian surgeon, no matter how skilful a diagnostician and operator he may be, does not prove a useful military surgeon immediately after assignment to duty. This is due to lack of familiarity with military organization and surgical conditions as they present themselves on the battle field, on the lines of communication, and in the immediate rear of the army.” *

In the first camp I had charge of, there were only one hundred officers and men all told, among whom there occurred a heavy

Read at the annual meeting of the Alberta Medical Association, Medicine Hat, July, 1914.

*Extract from “The Military Surgeon,” by Capt. S. M. Blech, U.S. Army Medical Corps.

epidemic of diarrhoea, and four cases of enteric after camp, a higher morbidity—not a higher rate of morbidity—than has occurred in subsequent camps of one thousand and more over which I have had medical supervision. Of course, I was younger then, and less experienced, but it must be borne in mind that I was probably an average example of the raw material from which we would obtain our recruits in the medical service. In order to appreciate the difference between civil and field surgery, it must be borne in mind that every war represents a “traumatic epidemic.” The casualties may be enormous in number for certain periods and localities, or even throughout the entire “front,” hampering the movements of the combatants. The medical service is not only charged with the treatment of the individual sick or injured soldier, but is entrusted with the duty still more important—from a strategic point of view—of removing the incapacitated to the rear, the so-called evacuation service. Humanitarians consider the care of the sick and wounded the most important duty of the army medical service, sanitarians the prevention of disease, strategists the removal of the wounded to the rear, or their prompt return to the firing line when only temporarily disabled—the so-called “evacuation and replenishment service.”

Surgical therapy must not conflict with this last-named service. In fact every consideration is but secondary to the main purpose of winning the battle. The will of the commanding general is supreme. War is synonymous with great personal sacrifices upon the altar of patriotism. The surgeon, as will be seen later on, must save life whenever and wherever possible, but in a manner prescribed for him by higher authority. Except in home territory, safe from contact with the enemy, individualization, the pride and glory of the scientific surgeon in civil life, is out of place. The massive, or, if you please, “wholesale” character of the injuries to be treated requires a “wholesale” system of attention—“pattern-like,” if need be.

If we further consider that the injuries encountered on the battle field are of a nature not met with in time of peace, arms and projectiles differing considerably from the revolver and rifle handled by civilians; if we further realize that oftentimes the surgeon may find himself handicapped by the absence of such equipment as he has come to look upon as essential for successful work in his office, dispensary or operating room, we will realize that there must exist some difference also from a purely technical standpoint.

The military surgeon contented himself in early days with the

care of the sick and wounded, but with the advance of medicine, and especially of preventive medicine, these functions have been extended to include all matters pertaining to the preservation of the health of armies, so that in addition to their entire care, when ill or wounded, the military surgeon has now to deal with all matters pertaining to sanitation and hygiene of the well. *In pace para bellum* is capable of extension to, "in times of health, prepare for sickness." The duties are extremely complex and technical and require a thorough knowledge of administrative details, and differ from those of the civilian surgeon in many respects. The civilian surgeon has usually only to attend to the medical or surgical aspect of his case; his patients being housed in the hospital or at home, where all details of shelter, food and clothing are provided for. The military surgeon has in addition, a multitude of details to attend to, viz.; food, shelter and clothing, medicine, drugs and attendance, transportation from the battle field to the field hospital, and thence to the base hospital. In addition, he has to maintain discipline, attend to the pay of patients and attendants, and is responsible for the condition of the hospitals under his charge and for their medical equipment. No matter how high his professional standing in civilian life, he will prove a lamentable failure as a military surgeon unless he also possesses executive ability and adaptability of no mean order. Even these qualities will not render him an efficient officer, unless he has acquired the technical knowledge of administrative details, relating to the obtaining of supplies, shelter, transportation and attendance.

Finally, unless he is versed in the methods of preventive medicine, he will not be able to give proper sanitary advice, nor to supervise the general sanitation and hygiene of troops. Inefficiency and incompetency in the medical department may have disastrous and far-reaching results, and may be important factors in the ultimate result of the war itself. In the Spanish American War, the States suffered heavy losses at the camps of organization and mobilization from the inroads of eruptive and enteric fevers—all preventable causes, due to the lack of training of their medical service. This alone might have led to their ultimate defeat had the combatants been more evenly matched. As a converse illustration, the success of Japan in the war with Russia was largely contributed to by the high state of efficiency of their medical army service. The importance of attention to details is illustrated by the fact that the Russians were far more subject to wound infection than the Japanese. This was especially noticeable in the winter months, and resulted directly

from their paying less attention to personal hygiene and from the wearing of greasy woollen under-garments instead of cotton.

Now the object of both these papers* is to prove to you the vital necessity of observing that good old maxim, "In times of peace, prepare for war." As medical men, we can best serve our country in a professional capacity, but no matter how patriotic we are, we must have preliminary training.

It is quite within the bounds of possibility that the conditions outlined in Major Drum's paper may occur in our time. Every one of us would respond to the call to arms, and right at the onset of hostilities the maintenance of the health of the troops would be entrusted to us, troops largely composed of raw levies, unaccustomed to discipline and the sanitary regulations of camp life. Unless we have some knowledge of these duties, sickness and disease will exact a heavy toll, and as a result of medical inefficiency, men who are anxious and willing to fight for their country, will never reach the front. Instead, they will become a source of burden and expense to the country, and their disability a lasting reproach to the medical service. Major Drum has therefore consented to recommend that a School of Instruction for army medical corps officers be authorized to be held in Calgary next winter, provided that at least twenty men agree to take the course of twelve days training. Roughly speaking, there would be one hour in the early morning (6.30 or 7 a.m.) devoted to drill and instruction in field work, and an afternoon and evening lecture each day. The hours would be arranged to conflict as little as possible with our every day work. There is a small allowance for living expenses, and in addition, officers from outside points will be allowed their transportation expenses. It will not be long before the establishment of a cavalry field ambulance with headquarters at Edmonton will be authorized, and officers qualifying now will be in line for rapid promotion.

*The reference is to Major Drum's paper (see page 881).

SEPTEMBER 23RD, 1914.—It is gratifying to note that, since the declaration of war, no less than fifty medical men in Alberta alone, have already signified their intention of taking this course, to qualify themselves as officers in the Army Medical Corps or to take command of Red Cross or St. John's ambulance units; the use of the last two is not confined to time of war only. Such organizations can render invaluable services in times of peace during any great national calamity—fire, flood, famine, or riots, the latest instance being at Dayton during the floods in Ohio.

ANTITYPHOID INOCULATION AT THE WINNIPEG GENERAL HOSPITAL

BY SYDNEY J. S. PEIRCE, M.D.

AT the meeting of the Manitoba Medical Association in Portage la Prairie in 1910, the question of antityphoid inoculation came under discussion. The writer then was able to announce that the routine immunization of the nursing staff of the Winnipeg General Hospital against typhoid fever had been commenced some months previously. The time since the institution of the procedure was then so short that he was unable to estimate from personal experience the degree of its value, but he promised to report progress at a subsequent meeting. It is therefore in fulfilment of this promise that this short communication is presented.

Antityphoid inoculation was in use in the Winnipeg General Hospital as early as 1909, but only among the laboratory staff. It had scarcely the status of anything more than the pathologist's fad. It was not until the spring of 1911, when the work of Richardson and Spooner in the Massachusetts General Hospital, and of Major Russell in the United States Army, had definitely established on this side of the Atlantic the value of this procedure, that it seemed justifiable vigorously to advocate its application to the entire staff of the hospital. At the request of the medical staff, the writer prepared data¹ which showed that during the ten years previous to 1911, an average of seven cases of typhoid fever per year occurred among persons working in the hospital. The lowest number in any year was three and the largest fifteen. The individuals most frequently attacked were the nurses in their first and second years of training, and the medical orderlies. The amount of time lost to the hospital on account of typhoid fever was equivalent to one person being off duty and supported at the expense of the hospital throughout the whole of ten years. In June, then, of 1911, the routine inoculation of the nursing staff was commenced and has proceeded ever since.

The vaccine is prepared in the hospital laboratory. The organism is the stock strain of *B. typhosus* which has been in use

Read before the Manitoba Medical Association, June, 1914..

in this laboratory during the last eight years. Subcultures of this are made on large agar slants, and the growth of twelve to twenty-four hours emulsified in normal saline solution. An estimation of the number of organisms per cc. is made, and to the thick emulsion is added one-thousandth of its volume of commercial formalin. This mixture when tested at the end of twenty-four hours, is invariably found to be sterile. It is sealed hermetically in glass tubes and set aside for three weeks or more to ripen, as it is found that severe reactions are more likely to occur when fresh vaccine is used than when it is two or three weeks old. To be prepared for use, the stock vaccine is diluted with normal saline so that 1 cc. contains two thousand million organisms, and its sterility is re-tested. Of this vaccine three subcutaneous injections are administered, consisting of 0.25, 0.5, and 1 cc., at intervals of ten days each. It will be seen that this vaccine differs in two respects from that used in the British and the United States armies. In the latter vaccine the organisms are killed by means of heat, whereas in the Winnipeg General Hospital vaccine the organisms are killed by means of formalin without heat. It was observed by Colonel Sir William Leishman and others that with the heat-killed vaccines, unless considerable care is exercised to avoid overheating, the vaccine is liable to be relatively inert. The avoidance of all heat would therefore seem to be advisable. Major Russell² in a series of experiments on rabbits with vaccines killed by means of various antiseptics, found higher bacteriolytic values with the formalized vaccine than with any other form. He was, however, satisfied with the heat-killed vaccine then in use in the United States Army, and did not feel disposed to change. The writer is not aware of any institution outside of the Winnipeg General Hospital, and a few other hospitals supplied by it, in which the formalized vaccine is in use. The Winnipeg General Hospital vaccine differs also in its larger dosage. The routine in the British Army is to give two injections of five hundred million and one thousand million, respectively, in the United States Army, three doses, one of five hundred million and two of one thousand million. In the Winnipeg General Hospital the doses are five hundred million, one thousand million, and two thousand million. It is found in practice that the large final dose is quite well borne. The reaction from it is usually quite insignificant, even though the reactions from the first and second may have been severe. It is interesting to note this, as the individuals vaccinated are largely young women, who are presumably more liable to react than a robust male such as a trooper in the army.

It seems, however, that women and children stand vaccination well. The writer recently had opportunity to observe the effect of the vaccine upon children during a recent outbreak of typhoid fever in an orphanage in this city. The city health department decided to inoculate all the inmates, and seventy-six children and thirteen adults received immunizing doses. The children, nearly all being under twelve years of age, were given half the adult dose. Of the seventy-six children, only 16 per cent. gave any appreciable reaction. Of the thirteen adults, eight or 54 per cent. gave moderately severe reactions.

Since July, 1911, the value of antityphoid inoculation has been abundantly demonstrated. By its use typhoid fever has been practically eliminated from the United States Army,³ and in the British Army in India reduced to an insignificant minimum.⁴ The experience of a single hospital, therefore, can add little to the great fund of data upon which this demonstration is based, but nevertheless, since antityphoid inoculation has not yet been extensively practised in Western Canada, it is thought that the data accumulated during the last three years at the Winnipeg General Hospital with respect to this procedure, are of sufficient interest to warrant their presentation before this association.

From June 24th, 1911, to June 1st, 1914, four hundred and forty-five persons have received doses of antityphoid vaccine in the Winnipeg General Hospital laboratory. Of these two hundred and seventy-six were nurses and maids, and one hundred and sixty-nine medical students, orderlies, doctors, and citizens who have requested to be vaccinated. Among all these cases no typhoid fever has yet been reported, with a single exception. This was a nurse who about six months previously had received three immunizing doses. She contracted a low fever from which she recovered in about three weeks. The Widal reaction in her case was positive. But this is not diagnostic of typhoid fever in a vaccinated person. No blood cultures were made, but examination of the stool failed to reveal typhoid bacilli. It cannot be said that the diagnosis in this case was complete, but in the absence of any other diagnosis it is recorded as a case of typhoid fever. With this single exception no case of anything resembling typhoid fever has in three years been reported among these vaccinated individuals, all of whom have been actually or presumably exposed to typhoid fever.

Among the whole hospital staff during these three years there have been but three cases of typhoid fever. One is the case of

doubtful diagnosis that has been mentioned. The second was a case of an orderly who had declined vaccination. The third was a nurse, also unvaccinated. The last case is of a peculiar interest. The young lady had certain scruples, presumably of a semi-religious character, against vaccination, and as the treatment is not compulsory these had to be recognized. It is interesting to record that she was the only individual of her class who was not vaccinated. That she should be the only one to contract typhoid is at least a striking coincident.

CONCLUSIONS: Formalin-killed vaccine is of potency at least equal to that of heat-killed vaccine.

Full immunizing doses of antityphoid vaccine are well borne by young women.

By the systematic application of typhoid inoculation institutional typhoid can be eliminated.

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THE cornerstone of the new centre wing of the St. Boniface Hospital at Winnipeg was laid on August 16th, by Bishop Beliveau. The new building will measure 177×50 feet and will be seven storeys high; the cost will be about \$250,000. The St. Boniface Hospital was first opened in 1870, and then consisted of a small frame building which could accommodate four patients. When the new building is completed, the capacity of the hospital will be from four hundred and fifty to five hundred beds.

SUBTROCHANTERIC FRACTURE OF THE FEMUR

BY W. G. ANGLIN, M.D., M.R.C.S. (ENG.), F.A.C.S.

Kingston, Ont.

THIS brief note on the subject of the treatment of the above fracture is not submitted for the attention of the metropolitan surgeon of large experience, but more particularly for the practitioner who may have comparatively few opportunities of dealing with this form of injury.

In many cases fractures must of necessity be treated in the home, and cannot have the benefit of the skilled attention of the surgeon of a large city hospital, who probably, in the light of modern opinion and with the aid of well qualified assistants, would be influenced to treat this special form of fracture by the open method and secure the apposition of the fragments by a Lane's plate.

If we can secure equally good results without submitting the patient to operation and retention of the metal plate, I believe it is a consummation much to be desired. All surgeons are aware of the difficulty of securing a good result by ordinary traction apparatus in the case of a fracture of the femur just below the trochanters, because the displacement of the short upper fragment cannot be overcome by traction alone. The lower fragment must first be brought into line with the upper fragment by flexion and abduction of the thigh, and slight rotation outwards.

The main object of this paper is to emphasize the treatment of subtrochanteric fracture of the femur by the special splint known as Hodgen's, which while giving uniformly good results, at the same time minimizes the amount of surgical nursing required, and gives to the patient the utmost degree of physical comfort. The treatment can be carried out in the home without a special nurse under the supervision of the attending surgeon.

Under the heading subtrochanteric fracture we include all fractures occurring in the upper third of the shaft of the femur. Most of the cases under my observation have been due to direct

violence. In one case simultaneous fracture of both femora occurred in a lad of fourteen years of age who fell in front of a threshing machine which was being drawn along the road by a traction engine. The Hodgen's splint was not used in this case, the left femur being treated by a double inclined plane with traction, while the right femur was plated. Another young man was struck by a swinging bucket in a mine and sustained a fracture of his left femur. In one case, that of a school boy aged twelve, the fracture was occasioned simply by his being pushed off the sidewalk by a companion.

In all the cases the usual displacement was found, namely, flexion, abduction and outward rotation of the upper fragment, while the lower fragment dropped backwards and was pulled upwards. The diagnosis in each case was confirmed by *x-ray* examination. The ordinary signs of fracture were well marked and there was shortening of the limb with marked eversion of the foot. Bruising and swelling of the thigh was very evident in some of the cases and treatment for a few days was directed towards the reduction of this swelling before making use of the permanent splint, the limb meanwhile being supported and kept at rest by means of sand bags.

The well-known principles underlying the treatment of fractures are, first, correction of the deformity by the reduction of the fragments and, secondly, fixation of the broken bone when the fragments are placed in apposition by suitable retention dressings and apparatus until bony union has taken place. Treatment by Buck's extension and long T-splint is utterly unsuited to this form of fracture, as there is very little control over the upper fragment. The lower fragment must be brought into line with the upper fragment, and to do this and retain the fragments in apposition I know of no splint which is so admirably adapted for the purpose as Hodgen's.

Hodgen's splint is a metal frame made to suit the individual case and may be obtained from any competent blacksmith who will follow the instructions of the surgeon. It consists of two parallel bars preferably of three-eighths inch steel conforming to the width and length of the injured limb, and bent at a point corresponding to the knee joint. These bars are connected at the lower end about six inches below the sole of the foot by a straight bar, and at the upper end by a curved bar elevated a few inches above the groin and parallel with Poupart's ligament. So that the splint may be suspended, a pair of hooks is placed on the bars about midway

between the groin and knee, and another pair between the knee and ankle. Strips of flannel, or preferably canvas, about four inches wide are attached by being stitched to one of the bars, and adjusted by safety pins to the opposite bar so as to form a sling or hammock to comfortably support the limb. The ordinary Buck's extension strips of adhesive plaster are placed on the limb, the strips extending well up to the upper end of the lower fragment. The degree of flexion of the thigh is regulated as required to secure apposition of the fragments by the length of the canvas strips supporting the thigh. The extension cord from the spreader below the foot is to be fixed to the lower bar of the splint, thus making the necessary extension when the limb is suspended.

Before placing the limb in the splint, an anæsthetic is administered to the patient and four coaptation splints are carefully adjusted to the thigh while an assistant, grasping the leg and foot, makes the necessary extension and flexion. Gooch's splinting or poroplastic felt is used for this purpose. The anterior and posterior splints are bevelled to fit the groin and buttock respectively and extend to just above the knee, and internal and external splints of appropriate length are applied. These splints, properly padded, are held in position by strips of adhesive plaster.

The limb is then placed in the Hodgen's splint and the canvas strips pinned in position. At the foot of the bed, which is raised on six inch blocks, an upright bar is attached with a pulley about six feet above the bed from which the splint is to be slung. Cords are attached to the hooks at the sides of the splint and lead to a pulley, and from this another cord passes over the pulley on the upright bar. This latter pulley is arranged to one side so that the limb is abducted and rotated outwards. The obliquity of the supporting cord should be from 15° to 30° , and this obliquity can be altered by changing the position of the patient's body in the bed. The cord is attached to the foot of the bed after passing over the pulley. Fracture boards should be placed under the mattress. The leg should swing clear of the mattress, the patient's heel being a few inches from the bed.

This arrangement gives the patient the greatest degree of comfort. There is no restriction to the body as the splint accommodates itself to changes of position and the semi-recumbent position may be assumed without disturbing the apposition of the fragments. The bed pan may readily be adjusted from the sound side with the greatest of ease and without causing the patient any inconvenience. This splint may be used for all fractures of the

shaft of the femur except at the extreme lower end, but particularly for fractures of the upper end.

Union takes place early. Rapidity of repair was characteristic of all the cases treated. In several cases within a fortnight of the application of the splint, the great trochanter was found to move in unison with rotation of the whole limb, showing that a certain amount of union had taken place in that time. The splint, however, was retained in all cases for eight weeks, and then the patients were allowed to move about on crutches. The favourable results obtained seem to me to justify calling attention to the employment of Hodgen's splint for the treatment of these fractures.

Discussion

Dr. C. L. Starr: Regarding the treatment of fractures of the upper third of the thigh in young children, we find that the reduction of the fracture in the x-ray room, taking a skiagraph before and after, with application of plaster of Paris from nipple to toes, gives us the best result. After the application of the plaster the patient is placed on a modified Bradford frame with an opening at the pelvis. This is carried on cross bars above the level of the bed.

Dr. F. N. G. Starr asked Dr. Anglin the object of the coaptation splints. Personally he could see no object in their use. His objection to all kinds of fancy splints was that so much attention is given to the proper application of the splint that the necessity of reducing the fracture is overlooked. He had abandoned the splint described because of the impossibility of getting efficient extension.

Dr. Anglin fully endorsed the remarks as to the treatment of these fractures in young children. He only advocated the use of Hodgen's splint in the case of adults. Regarding Dr. F. N. G. Starr's question, Dr. Anglin replied that in the treatment of fracture of long bones the use of coaptation splints was so obvious that comment was unnecessary. Hodgen's splint was not a *fancy* splint, but one that could be readily made by any blacksmith, and the perfect results obtained in Dr. Anglin's cases was sufficient proof to him that efficient extension was secured.

The actual application of the splint was illustrated on a patient with suppositious fracture.

Case Reports

A CASE OF TETANUS, WITH RECOVERY, TREATED BY CARBOLIC ACID INJECTIONS

MALE patient, F. B., aged eighteen, coloured, teamster, admitted to the Toronto General Hospital, September 30th, 1913. Family and personal history unimportant.

Present Illness: On Saturday, September 13th, which was a half-holiday, he was watching a game of baseball and happened to be wearing the stockings which he had worn all week in his stable duties, and a pair of thin-soled shoes which were not worn in his ordinary duties about the stable. As a result of some remarks which gave offence in the progress of the game he was chased, and, in hastily climbing a fence, he set his foot on the top of a small hydrant with a square brass tip which, as he vaulted over the fence, penetrated the sole of the boot and injured the foot. The injury to the foot kept him from work, and four or five days later, as a result of some slight festering, he was able to take out from the wound a portion of the sole of the boot and a fragment of the sock. There was little suppuration, but much induration and tenderness which kept him from work, until, on the thirteenth day, he noted a slight stiffness of the muscles of the neck and the jaw and some difficulty in swallowing, so that on one occasion his jaws came together, biting the inner side of his cheek. On the fifth day thereafter he was admitted to the hospital.

Condition on Admission: Little or no fever; the whole course of his illness was practically without fever. General muscular hypertonus, amounting to slight rigidity; no convulsions or opisthotonus; plantar reflexes normal; other reflexes heightened; lumbar puncture caused general spasticity and tension of muscles, especially of the limbs, but no convulsions; the spinal fluid showed very little opalescence; Noguchi and ammonium sulphide tests negative; Haines solution slightly reduced; the microscope showed fifteen cells per c.mm., mostly polymorphonuclear. A few hours after admission he was given, under chloroform, 10 cc. antitetanic serum (B. and W.) into the spinal canal. October 1st, very severe

headache, causing the patient every three or four minutes to cry out. The wound was freely incised, thoroughly swabbed out with pure carbolic acid and dressed with bichloride compresses. Smears from the wound gave *B. tetani*. Cultures were not so successful, from contamination. The second dose of 20 cc. antitetanic serum was given under chloroform sixteen and a half hours after the first dose. The headache continued to be very severe for another day. Chloral hydrate, 10 grs. and potassium bromide 20 grs. were given every four hours. No more serum was administered, but on the day after admission, beginning on October 1st, the following course of carbolic acid injections was given hypodermically, and note was made simultaneously with regard to the white cell count and the effect of the drug upon the urine.

Synopsis of carbolic acid injections, alternating (1) in the left pectoral region, (2) right pectoral region, (3) left thigh, (4) right thigh, and so on, with the white cell count taken at time of each injection. Each injection consisted of pure carbolic acid and glycerine of each one drachm. Leucocytes on admission 7,600.

Injection.	Date.	Hour.	Leucocytes.
First.....	October 1	11 P.M.	13,125
Second.....	October 2	4 A.M.	16,000
Third.....	October 2	8 A.M.	20,900
Fourth.....	October 2	2 P.M.	18,750
Fifth.....	October 2	11 P.M.	21,250
Sixth.....	October 3	8 P.M.	21,875
Seventh.....	October 4	9 A.M.	20,500
Eighth.....	October 4	8.30 P.M.	24,000

No further injections were made, but the white cell count was made morning and evening until October 9th, after which it was made once daily:

No injection.....	October 5	9 A.M.	23,000
		8 P.M.	20,250
No injection.....	October 6	8.15 A.M.	19,225
		8 P.M.	17,500
No injection.....	October 7	9 A.M.	17,500
		8 P.M.	16,000
No injection.....	October 8	9 A.M.	13,250
		6 P.M.	12,210
No injection.....	October 9	.....	12,600
No injection.....	October 10	.....	13,800
No injection.....	October 11	.....	9,400

URINALYSIS CHART

Date	Reaction	Spec. Gravity	Albumin	Sugar	Microscopic	
Sept. 30...	Alk.	1020	No	No	Phosphates. epith. cells, debris.	
Oct. 1...	Alk.	1018	No	No	Phosphates. epith. cells, debris.	
Oct. 2...	Alk.	1022	No	No	Few R.B.C.	No Carboluria (tested with FeCl and bromine water).
Oct. 3...	Acid	1035	No	No	Few R.B.C.	No Carboluria
Oct. 4...	Acid	1032	No	No	Few R.B.C.	No Carboluria
Oct. 5...	Acid	1030	No	No	R.B.C.	No Carboluria
Oct. 6...	Acid	1028	No	No	R.B.C.	No Carboluria
Oct. 7...	Acid	1022	No	No	R.B.C. few	No Carboluria
Oct. 8...	Acid	1020	No	No	R.B.C. few	No Carboluria
Oct. 9...	Acid	1020	No	No	R.B.C. none	No Carboluria
Oct. 10...	Acid	1018	No	No	R.B.C. none	No Carboluria
Oct. 11...	Acid	1018	No	No	R.B.C. none	No Carboluria

No casts at any time.

The local results of these injections were very marked tumefaction and tenderness, so that the parts looked as if they must break down with sloughing. Within a few days, however, complete local recovery had occurred and practically no damage whatever persisted. Two other facts may be noted: (1) The complete immunity of the kidneys from the damage that would inevitably have resulted if carbolic acid in these amounts had been swallowed, leaving out of consideration the injury to the stomach, which would follow on very much smaller doses if given by the mouth. (2) The stimulating effect of the drug upon leucocytosis. It will be noted that the white cell count which began at 7,600 did not fall to that level or near it until a full week had elapsed after the last dose was given.

Convalescence was rapid and uneventful. Local lesions due to the injections had all disappeared by the eleventh, or one week after the last injection, all rigidity of muscle had gone and the patient was discharged, cured, in a few days.

I do not of course claim that this happy result was solely due to the treatment, but it shows clearly that the treatment is at least innocuous, and would appear to be a distinct addition to our means of combatting one of the most dreadful of all the acute infections.

There are four diseases which have been shown by modern research to be at least first cousins etiologically, though clinically they are so diverse. They are: shingles, rabies, tetanus and acute poliomyelitis. The toxins of these diseases are alike in their fatal selective influence upon the nerve tissues. The infection in tetanus is purely local. The toxins, continuing to be produced at the original focus, slowly produce their symptoms, during a period which has wrongly been called one of incubation, by combining with the axis cylinders of the motor nerves leading from the wound, with which nerve substance they combine to form a new compound of great chemical stability. The poison does not spread, according to the authorities, by the lymphatics and vessels of the nerve sheaths, but when it has slowly combined as above stated with the medullary substance of the nerve trunks, and has thus reached the cord and anterior horn, or basal ganglia in wounds of the head, symptoms begin to appear. This probably explains, at least in part, why tetanus infection of head wounds is so much more rapidly fatal, while wounds further away take longer to produce symptoms—in this case thirteen days. Even so long ago as the time of Hippocrates it was stated in one of his aphorisms that “such persons as are seized with tetanus die within four days, or if they pass these they recover.” The severity, and usually fatal ending, in cases of head wounds has caused some physicians to speak of these as “head tetanus,” and in some cases they have been confounded with hydrophobia on account of the severity of the convulsions and the difficulty of swallowing. It would seem, too, that the serum, though admittedly protective if used early, cannot be called curative. Its use, therefore as a prophylactic in the case of wounds in which tetanus infection is possible is rational and should be urged upon the profession. The costliness of the remedy makes it advisable that boards of health should provide it, and that great industrial concerns whose employees are subject to such injuries should provide it for their surgeons, and should be required to use it in every case where tetanus is possible. The considerations above mentioned, however, make its use as a curative measure after the development of symptoms uncertain, and in practice it has been found actually disappointing. The prophylactic dose is from 500 to 1000 units given at once, followed by a second, perhaps larger, dose in ten days. Even after symptoms have occurred, however, it would be sound practice, after thoroughly opening the wound and swabbing it with pure carbolic acid, to infiltrate all the surrounding tissues with the serum so as to neutra-

lize the toxins present in the focus of infection. Some authorities recommend a similar infiltration of the nerve trunks leading from the wound, which would be quite possible in the case of the larger nerves at any rate, and intraspinal injections are also probably rational as neutralizing toxins which have not yet entered into combination with nerve tissue. Other measures, however, may not be neglected, and of all the many nerve sedatives which have been used chloral and its bromides seem to remain the most useful. I need not refer to the necessity of rest, seclusion, skilled nursing and the avoidance of everything which tends to startle, or bring on a spasm. Even feeding may have to be done under chloroform by the stomach tube. In severe cases profuse sweating is usually seen from the muscular exertion involved in the convulsions which are, if severe, to be controlled by chloroform, and morphine will also be found to be of great value.

I do not, however, wish to weary you with a digression upon the subject of tetanus in general, but rather to show you the possible advantage of what seem enormous doses of carbolic acid, and particularly their harmlessness in any event. So far as I am aware the credit of the introduction of this method of treatment must be given to the late Dr. George A. Peters, who saved the lives of at least two desperate cases in the Toronto General Hospital a few years ago. Seeing that they were about to die, if unrelieved, he called upon the experience of the veterinary surgeon of his regiment, the 9th Mississauga Horse, Captain S. C. Macdonald, who had shortly before successfully treated tetanus in some of the horses at camp. Dr. Peters learned from Macdonald the doses he had given to the horses and the approximate weights of the animals and figured down his doses in proportion to the weight of his human patients. He found to his surprise that, given in this way, the drug was not deadly, and I think distinctly added to our armamentarium. I am free, however, to admit that my patient showed from the outset, apart from treatment, the three most favourable prognostic points of tetanus: the long interval (thirteen days) between the injury and onset of symptoms; the non-febrile course, and the limitation of the symptoms to the neck and jaw, so that I must ask you to clearly understand me as not attributing his recovery necessarily and wholly to his treatment by carbolic acid injections.

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Editorial

THE CANADIAN MEDICAL SERVICE

A VISIT to the mobilization camp at Valcartier is an impressive experience. At the time of writing the early departure of the first expeditionary force from Canada is expected. All the volunteers have been thoroughly examined and more than thirty thousand have been found medically fit. That the health of the troops has been so exceptionally good, must be ascribed in large measure to the thoroughness and intelligence with which the medical and sanitary corps have carried out their duties. There has been scarcely any serious illness. Pneumonia has been surprisingly rare, and not a single case of typhoid fever has originated in the camp. The water, which in its natural state was unsafe, is carefully chlorinated, and the supply is lavishly distributed throughout the vast extent of the camp. The inoculation against typhoid has been thoroughly carried out. It has aroused wide public interest and has called forth some criticism in the press. The judgement, however, of some of those whose opinion on the matter is worth having, is that there has been no undue proportion of severe reactions. In no instance has inoculation given rise to any serious symptoms.

The following is a list of about one hundred and twenty medical officers who have been on duty at Valcartier, and who are going to the front with the first contingent:

Lieutenant-Colonels: J. W. Bridges, P.A.M.C., K. Cameron, G. L. Foster, P.A.M.C., D. W. McPherson, J. W. Shillington, C. F. Wylde, Murray MacLaren.

Majors: C. C. Bell, D. B. Bentley, E. R. Brown, R. P. Campbell, J. T. Clarke, C. E. Doherty, H. C. S. Elliott, F. S. L. Ford, J. E. Gunn, E. B. Hardy, A. S. Langrill, E. A.

LeBel, G. S. Mothersill, McKenzie, John McCrae, S. H. McKee, W. T. M. McKinnon, R. Raikes, G. P. Templeton, F. L. Vaux, P.A.M.C., W. L. Watt, E. J. Williams, R. P. Wright.

Captains: F. E. Bell, P. G. Bell, W. Bethune, G. G. Boyce, P. C. Brown, A. A. Chisholm, P.A.M.C., J. C. Callhoun, E. C. Cole, Dillon, J. S. Duval, G. W. Dowsley, S. Ellis, C. G. F. Fortin, McKenzie Forbes, J. J. Fraser, J. C. Fyshe, G. H. R. Gibson, R. C. Geggie, Gauthier, G. G. Greer, Gilles, Goldsmith, Hollett, J. T. Hill, Leslie, T. A. Lomer, McGibbon, Morrell, H. E. Munroe, Morris, J. D. Morgan, A. D. McConnell, G. Musson, K. D. Panton, R. S. Pentecost, Phillip, P. Poisson, A. Rankin, Sommer, S. A. Smith, A. E. Snell, P.A.M.C., R. H. Sutherland, G. Shanks, F. A. C. Scrimger, J. H. Todd, W. H. Tytler, E. M. Vesey, Woodiwiss, E. A. Young, R. E. Wodehouse.

Lieutenants: Bennett, Burnham, G. Bauld, Burke, O. E. Carr, Chown, Colbourn, Cummings, Donaldson, F. E. Fox, Fisher, R. M. Gorsline, P.A.M.C., Haywood, A. L. Johnson, Jepps, H. B. Jeffs, F. McKay, McDonald, McDermott, J. H. McKillop, J. D. McQueen, H. J. Robertson, R. T. Rogers, G. A. Ramsey, A. E. Ross, Robson, F. S. Ruttan, E. L. Stone, F. F. Smith, E. C. Winsler, R. Wilson.

Each expeditionary force is to carry with it complete equipment for its base hospitals as well as for its field ambulances. No. 1 General Hospital, which will be situated in a large town far removed from the front, will have accommodation for over five hundred patients. The staff will consist of twenty-one medical officers and forty-two nursing sisters. It has been announced—and all the members of the Association will heartily approve the choice—that our president, Dr. Murray MacLaren, is to be in command. Drs. F. G. Finley and K. Cameron are to be in charge of the medical and surgical services, respectively. The rest of the staff also is largely recruited from the officers, past and present, of the Montreal General Hospital. Their names are included in the list given above. No. 1 Stationary Hospital, which will be a smaller

establishment situated nearer the front, will probably be in command of Major Drum, with Drs. McKee, Bauld, Morris, Johnson and Williams on the staff. Two similar hospitals will be sent with the next contingent, and it is expected that the staffs of these will be recruited chiefly from Toronto and the West.

Supplementing the work of the military authorities, several auxiliary organizations have been making active preparations. Notably the branches of the Canadian Red Cross Society have enlisted the practical help of the women of the country in the preparation of warm clothing for the troops and of medical supplies. It is announced that Col. Burland, well known for his work in the campaign against tuberculosis and for other philanthropic activities, is leaving for England to direct the work of the Canadian Red Cross. The funds raised by the women of Canada, primarily for a hospital ship which was found not to be needed, have amounted to the handsome total of \$285,960, and have been transmitted to the Admiralty. Of this sum, \$100,000 is to be given to the War Office, and the balance will be devoted to the establishment of a naval hospital near Portsmouth. The War Office has as yet no definite plan for the disposal of its portion of the fund, and it has been wisely suggested that a part or the whole of the money might appropriately be applied to the hospital which has been established by the Canadian War Contingent Association in London, and which is in need of funds. This hospital is to be known as The Queen's Canadian Military Hospital, and is for the general use of the king's forces. It was hoped that it might be opened early in October with fifty beds, ultimately to be increased to a hundred or more. The organization of the hospital was undertaken by Sir William Osler and Dr. Donald Armour, and was the outcome of an arrangement made by the Canadian War Contingent Association with the Army Council, through the Queen's Committee of the Order of St. John of Jerusalem, of which H.R.H. The Duke of Con-

naught is Grand Prior. The equipment and maintenance of the hospital for a year and the care of the sick and wounded during convalescence will, it is estimated, require at least \$100,000. Of this not more than \$55,000 has been subscribed by the end of September. The honorary treasurer of the association is Mr. G. C. Cassels, Bank of Montreal, London, E.C., to whom subscriptions may be sent.

THE HOSPITAL AND WAR

THERE is a well defined limit to the burden of charity which a community can bear. Under ordinary circumstances a city can care for its sick and poor, as an army can transport, and tend, its wounded. But to every army there may come a time when the wounded must be abandoned to their fate, so that the efficient may be saved.

In time of peace a civilized community discharges this obligation faithfully, though the charge is heavy. In a well equipped general hospital the over head cost for one bed is about eight dollars a day. This amount represents merely the interest, charge, and depreciation. In addition, the sustenance of the patient costs at least a dollar and a half a day. If medical attendance be reckoned, which it must be, although it is rendered gratuitously, five dollars more must be added. Every patient, then, who is received into a hospital costs the community nearly fifteen dollars for every day he remains in bed; that is, fifteen of his healthy fellow-men must work a full day for his support.

At the present moment the burden of war lies upon the community, and it must be borne. The men at the front are bearing it. Their wives and children must be supported. Incomes are impaired or destroyed. Many persons who in times past had a surplus for charity now find themselves hard pressed to provide the necessities of life for their families. We are face to face with the primitive truth that for the safety of the State, the well are more important than the sick.

Many hospitals are already partially closed, and some

will in due course shut all their doors. The stream of charity has been diverted, and there is no money in sight for immediate needs. In many cases the staffs are depleted. From the Montreal General Hospital eleven members have gone to the front, including Drs. Cameron, Finley, Wylde, Campbell, Forbes, McKee, Shanks, Cumming, Macdermot, Robson, and Ramsey. From the Royal Victoria, Drs. McCrae and Keenan have gone; and Dr. Birkett, dean of McGill medical faculty, is to follow shortly. It is a strange phenomenon, the sick of a large city being uncared for, but it brings to our very doors the hard reality of war.

THE MOMENT AND THE TELEPHONE

EARLY in September the physicians of Montreal received a communication from the Bell Telephone Company that the rate for their telephone service would be increased to fifty-seven dollars for a desk telephone. The present rate is forty-two dollars. In the communication referred to, the statement is made that this increase was "recently authorized by the Board of Railway Commissioners for Canada." This statement is incorrect. No such rate has been authorized at any time by any body except the Telephone Company itself. If the Telephone Company chooses to be technical it is open to the profession to be technical too.

An application from the company for permission to increase the rate to physicians was made to the Board of Railway Commissioners. The application was not made quite in that form. With a fine disingenuity it sought permission to discontinue "the reduced tolls previously granted to physicians," whilst in reality the tolls which they paid have always been higher than those exacted from other private persons who were not engaged in business.

The Medico-Chirurgical Society at once protested, and the protest was heard on January 5th, 1914, Dr. Armstrong appearing for the Society. The decision was given orally

by the assistant Chief Commissioner; authorizing a certain imposition, and those who are anxious to read the text will find it in volume ninety-four, page twenty-one of the report. The assistant Chief Commissioner made no pretence of going into the merits of the case. He merely referred to "a somewhat similar case," which was in no respect similar, in which an increase was granted by some one else. This was the case of Miss Bayly, of Toronto, and her rate was increased from the residence to the business rate. It was decided "that her telephone being used sometimes for business purposes was a business telephone, and the company was justified in charging a business rate." The Board of Railway Commissioners itself is one of those extra-judicial bodies which are growing up in our midst, and is itself only justified so long as it adheres to common-sense. It exists to control corporations, not to enable them to impose upon the public.

The residence rate is thirty-five dollars. If a telephone in a residence, "which is used sometimes for business purposes," thereby becomes automatically a business telephone, it is clear that all telephones are business telephones, since all telephones are used for that purpose. The man who summons a physician by telephone, who orders his coal or groceries, who speaks with a stock-broker, who enquires about the departure of a train, is transacting business, and so is amenable to the higher rate. It may possibly be that the company is entitled to exact from physicians a higher rate, but that right will have to be determined on other grounds than those already put forward.

Many things have happened since last January, and even if such a right were granted, the present is not the moment to put it in force. The hospitals are closing their wards for lack of support. The sick must be cared for, and the burden will fall upon the physicians in their private capacity. At the same time they are being called upon to treat gratuitously the families of those who have gone to the front. Ten per cent. of the physicians are actually serving in the militia,

which is exactly twenty times the proportion in the community as a whole; and it is not on record that the Telephone Company is suffering to the extent of a reduction in its dividends.

A great deal of top-hamper has come down. Things which were at one time considered necessities are now discovered to have been luxuries or burdens. It is wonderful how well people are getting along without opera, stock-exchanges, wines, and cigarettes. The telephone is in the same category. To physicians it is not an unmixed good. It puts him at the mercy of every hypochondriac within a radius of four hundred miles, of every woman who is suffering from ennui, and of every patient who wishes extra and gratuitous advice. If physicians only had the resolution to seize upon this imposition as a warrant for ridding themselves of the burden, they would be astonished at the peace and comfort which would come into their lives. Their fees would not be diminished, since patients who require their services will find ready means of making their wishes known. When physicians abandon the telephone on grounds of health and comfort, the public will soon follow their example, and the Company will then have nothing else but "business telephones."

AN EXPERIMENT IN TYPHOID

IT is always well to write down what one thinks is going to happen, if only to be sure how wrong one will be. For nine months we have been reiterating that Montreal was in peril of an epidemic of typhoid fever. On December 25th, 1913, the water supply failed entirely. For ten days the citizens reverted to the methods which were in vogue in the time of Maisonneuve for obtaining water. The break in the conduit was patched, but there was every probability that it would recur. To provide against this contingency connexion was made between the city mains and the Lachine canal by a seven-foot pipe.

The Lachine canal acts as a sewer for a stretch of country eight miles long and passes through a very thickly settled region. Vessels of all kinds pass up and down. Its banks are lined with factories, and open privies are established on its edge. In the spring, when the water is let out, human bodies and carcasses of animals are discovered on the bottom. We protested as urgently as we could, against the use of water from such a source, and foretold an epidemic which would make a record for modern times. The Medico-Chirurgical Society also protested against this water supply as an outrage. Deputations to the city authorities were not listened to, and for three days Montreal was made to drink sewage as an experiment. Nothing happened; but this was early in the season when typhoid is not normally prevalent.

The water from the canal was turned on again in August and for three weeks was the only supply. It was charged with chlorine; but no advice was given to boil it; although the city engineer did admit that there was no law to prevent the citizens from boiling their water if they so desired. These were the hottest days of the year. Nearly a month has now passed, and there has been no epidemic. The incidence of typhoid is about as in previous years. Either a miracle has happened, or there is something yet to be learned about water supplies.

IT is from no spirit of chauvinism that future issues of the JOURNAL, at least for a time, will contain no "Abstracts of German Literature." The conditions prevailing at present in Europe react in many ways, even in the sphere of medical journalism. The persons and institutions affected are many. They include various colleges and universities, which are unable to obtain literature of any kind from Germany. The professors are submitting with the grace that is born of necessity to the added labour involved in a complete re-organization of their courses.

DURING the past two months a harrowed world has been taught a new idea of the meaning of the word *Kultur*, always the most overworked term in the German language. Leaving aside the atrocities of which one reads daily, and which are not proved, the destruction of Louvain and of Rheims will fasten the stigma of brutality and vandalism upon this generation of Germans for ever. Both of these outrages concern us chiefly, indeed, as human beings, but also, to a less extent, as physicians. The university of Louvain has always been famed for its theological teaching, but it has also played its part in the history of our profession. Its medical faculty had existed for five hundred years or more and could boast of some famous names, especially that of the inventor of the word *gas*, the great seventeenth century chemist, van Helmont. The university may rise from its ashes, its ancient library will not. As for the cathedral of Rheims, if its historical importance and, above all, its own matchless beauty could not save it, it would be idle to expect its destroyers to spare it merely for the sake of a scrap of cotton with a red cross on it and of the wounded it harboured. This building was the masterpiece of the middle ages, and to many was the most beautiful thing ever wrought by the hand of man. "Louvain, Rheims! Even Attila, King of the Huns, the Scourge of God, spared the historic city of Troyes and its treasures of art, when Troyes fell within the area of *his* military operations." And for fifteen centuries he has been the prototype of the barbarian! *Delenda est Borussia.*

THE third annual meeting of the Alienists and Neurologists of the United States took place in Chicago, July 13th to 17th last, under the auspices of the Chicago Medical Society. The attendance numbered nearly one hundred and included official representatives from twenty-seven states. A special edition of the *Illinois Medical Journal* will be issued this month which will contain the papers read; and committees will be appointed in every state in the Union to bring before the governors and the legislatures the recommendations made at the congress.

Book Reviews

MODERN MEDICINE. Edited by SIR WILLIAM OSLER, Bart., M.D., F.R.S., and THOMAS McCRAE, M.D. In 8 octavo volumes of about 1,000 pages each, illustrated. Volume III. Diseases of the Digestive System—Diseases of the Urinary System. Price per volume, cloth, \$5.00 net; half morocco, \$7.00 net. Lea & Febiger, publishers, Philadelphia and New York, 1914.

We hasten to record that the third volume of Modern Medicine has appeared. To Canadian readers nothing more is necessary than mention of the fact,—the editors and their work are so well known. In this volume especial interest attaches to the articles by John McCrae and Charles F. Martin. Dr. McCrae writes the chapters on Diseases of the Œsophagus, and the introduction to Diseases of the Kidney. Dr. Martin writes the chapter on Organic Diseases of the Stomach. The other contributors are Thomas Brown, Julius Friedenwald, A. E. Garrod, James Herrick, A. O. J. Kelly, Eugene L. Opie, William Pepper, David Riesman, H. D. Rolleston, Alfred Steigel, C. G. Stockton, H. H. Young. With two such editors as Osler and McCrae, and with so noble an array of contributors, the book could not be anything else than it is, the standard of modern medicine.

THE PRACTICE OF SURGERY. By JAMES G. MUMFORD, M.D., lecturer on surgery in Harvard University. Second edition, thoroughly revised. Octavo volume of 1,032 pages with 683 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$7.00; half morocco, \$8.50

It seems a very short time since we had the privilege of calling attention to the first edition of Mumford's "Practice of Surgery," and again we give it good welcome. There is a nice flavour about the writing and a personality, as if the man wrote the book himself, and did not produce it by a machine kept for the purpose. Dr. Mumford is no stranger to the reviewer. One is already familiar with his "A Narrative of Medicine in America," "Clinical Talks on Minor Surgery," "Surgical Aspect of Digestive Disorders," "Sur-

gical Memoirs and other Essays." In the beginning there is a nice tag from *Religio Medici*, and the preface contains some pleasant comment upon the author and his reviewers. The frontispiece, which is a reproduction of an old and a modern operating room, gives a striking demonstration of the difference between the old and the new. The book itself opens with a consideration of appendicitis, and this unconventional method is based upon a principle; for as the author assures us in the preface, he takes up the subjects in their order of interest, importance, and frequency, and lays stress upon those subjects to which nature herself has attributed importance. This is part of an attempt to present the various subjects in their true perspective, since appendicitis is of more concern to the surgeon than inflammation of Meckel's diverticulum, meningitis than cirroid aneurism, and felon than Dupuytren's contraction. From this it will be seen that there is common sense about the book. It does not attempt to do more than can be done well; and what has been attempted has been well done.

MODERN SURGERY: GENERAL AND OPERATIVE. By J. CHALMERS DaCOSTA, M.D., Samuel D. Gross professor of surgery, Jefferson Medical College, Philadelphia, Pa. Seventh edition, revised, enlarged, and reset. Octavo of 1,515 pages, with 1,085 illustrations, some of them in colours. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$6.00 net half morocco, \$7.50 net.

This noble work is dedicated to "the inspiration of one of the greatest, most progressive, and most influential surgical clinics in the world." The inspiration is W. S. Halsted, the clinic, Johns Hopkins, the world, the United States. The book is written as by one having authority. There is a pungency in it which is refreshing. The preface is a model of what a preface should be, and we can well believe Dr. DaCosta when he says he was in profound perplexity as to whether an alleged discovery was a fragment of external truth or merely an emanation of chaos. If he admitted all the alleged improvements of recent years, a reader could find "the productions of the mistaken enthusiast, of the brilliant confidence man, of the deluded observer, of the conscientious worker, of the dull pretender, of the man with occasional flashes of genius, of the profound scholar, and of the grandee of science." He has avoided this heterogeneous company, and has brought forward a considered and calculated book. It was from its first

appearance even a standard. In its revised form—for this is the seventh edition—it is a standard yet.

COLLECTED PAPERS BY THE STAFF OF ST. MARY'S HOSPITAL (MAYO CLINIC) FOR 1913 Octavo of 819 pages, 335 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$5 50 net

The Mayo clinic is one of the most extraordinary phenomena in modern medicine. Messrs. Saunders have issued a large volume of 819 pages, which is made up entirely of contributions from the staff of St. Mary's Hospital where the clinic is held. There are twenty-nine contributors, and the subjects with which they deal cover practically the whole range of surgery. One gets the impression in reading these reports of being very near to the thing itself. The voices seem to speak in unison, and give a considered judgement. There is a deliverance on every possible subject, which must carry weight in view of the enormous experience by which it is informed. For example: "The Roentgen-ray. . . . has no direct effect on cancer. Radium is still in the experimental stage. Its effect is probably similar to that of the Roentgen-ray." There is a wonderful freshness about the presentation of each subject, a freedom from traditional bias, and an obvious intention of viewing the facts in all their simplicity. This is the new world of surgery, something like that new surgery which made the Greek schools famous.

A TEXT-BOOK OF MEDICAL DIAGNOSIS. By JAMES M. ANDERS, M.D., professor of the theory and practice of medicine and of clinical medicine, Medico-Chirurgical College of Philadelphia, and L. NAPOLEON BOSTON, M.D., professor of physical diagnosis, Medico-Chirurgical College, Philadelphia. Second edition thoroughly revised. Octavo of 1,248 pages, 500 illustrations, some in colours. Cloth, \$6.00 net; half morocco, \$7.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

It is so short a time since the first edition of this book was reviewed in these pages, that it is unnecessary to return to the subject at any length, excepting to say that any advance in the method of diagnosis, which has been achieved since that time, has been carefully considered and noted. All the im-

portant signs and symptoms of any given disease are classified together, and can be readily grasped. There are brief pathological descriptions. Illustrative cases are set forth, and comparative tables are freely used to demonstrate the distinction between clinical conditions which might at the first view be considered as closely allied or even identical. Dr. Anders has employed a somewhat similar method in his work on medicine, and in the present case it will doubtless find equal appreciation. The book has grown to 1,248 pages, and in such a volume of writing nothing very important can have failed to be recorded.

THE ILEO-CÆCAL VALVE. By A. H. RUTHERFORD, M.D. Price, 6s. net. London: J. K. Lewis, 1914

Dr. Rutherford, now of Sydney, presented a thesis for a degree to the University of Edinburgh upon the ileo-cæcal valve, that is, the orifice between the small and large intestines and the structures adjacent thereto. This thesis now appears in the form of a book which is issued by Mr. Lewis. Even a small book may deal with a small subject very thoroughly, and this one does so. The plates are numerous and very clear. It will be a long time before any anatomist will think it necessary to investigate further this part of the anatomy.

PRACTICAL PEDIATRICS. A MODERN CLINICAL GUIDE IN THE DISEASES OF INFANTS AND CHILDREN FOR THE FAMILY PHYSICIAN. By JAMES H. MCKEE, M.D. and WILLIAM H. WELLS, M.D. WITH APPENDIX UPON DEVELOPMENT AND ITS ANOMALIES. By JOHN MADISON TAYLOR, A.M., M.D. Illustrated, Volume 1 and 2. Price, \$12.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.

The present reviewer is bound to confess that he cannot get very far with a book which contains in the preface such words and phrase as damagement, eugenics, communal encouragement, contemporary findings, conditioning the buddings of human life forces, paramount, incipience of acquired abnormalities, concrete entity, conservators of health, conservation of infants, the foreground of their purpose. The writing in the book itself is more human; but there is too much "it is said," "probably"—"some authorities . . . other authorities." There is no finality of opinion expressed on the reaction of a woman's milk. We are merely told what Holt "contends," "though most authorities state that it is

fairly alkaline." For a book of such magnitude—two volumes making nearly 1,200 pages, it would be possible, one would think for at least one of the three authors to get a little phenol-phthalein—not phenophthalein—and make the test for himself. Also, we could well be spared so sententious an expression as this: with modern knowledge, mothers may make of maternity a noble profession. When they speak of a wet-nurse as "a czar," we must protest on behalf of our great Ally. In spite of these obvious defects the book is not to be too lightly regarded. It must have cost the authors infinite pains, and they have approached their task with courage, and a large equipment of a professional kind.

THE PRACTICAL MEDICINE SERIES COMPRISING TEN VOLUMES ON THE YEAR'S PROGRESS IN MEDICINE AND SURGERY Under the general editorial charge of CHARLES L. MIX, A.M., M.D. and ROBERT T. VAUGHAN, Ph.B., M.D. Volume I, General Medicine, edited by FRANK BILLINGS M.S., M.D., and J. H. SALISBURY, A.M., M.D. Price, \$1.50 Volume II, General Surgery, edited by JOHN B. MURPHY, A.M., M.D., LL.D., F.R.C.S., F.A.C.S. Price, \$2.00 Volume III, The Eye, Ear, Nose and Throat, edited by CASEY A. WOOD, C.M., M.D., D.C.L., ALBERT H. ANDREWS, M.D., and WILLIAM L. BALLINGER, M.D. Price, \$1.50. Chicago: The Year Book Publishers, 1914. Price of series of ten volumes, \$10.00.

This series is based on a sound principle. It is carried out with good sense. The various books which compose it are handy and cheap. The information which they contain is fresh and well arranged, and there is judicious comment where comment is needed. Each volume is complete on the subject with which it deals. A physician who wishes to know what is being done in medicine could not do better than to spend ten dollars on this series.

DISEASES OF INFANCY AND CHILDHOOD. THEIR DIETETIC, HYGIENIC, AND MEDICAL TREATMENT. By LOUIS FISCHER, M.D. Fifth edition. Philadelphia, F. A. Davis Company, 1914.

There seems to be no finality in the dietetic management of children. At one moment the protein element was avoided and fat was the thing. Sugar at least was considered neutral. Now it is the fashion to give protein in liberal amounts, to give fat with

a sparing hand, and avoid sugar as a disturbing element. The method now in vogue for the feeding of infants is fully described in this edition of Dr. Fischer's book, and it may instructively be compared with the methods as described in previous issues. The present edition is the fifth. In contents, bibliography, and arrangement it deserves increasing praise.

A TREATISE ON CLINICAL MEDICINE. By WILLIAM HANNA THOMSON, M.D., LL.D., formerly professor of practice of medicine and of diseases of the nervous system in the New York University Medical College; Octavo volume of 667 pages. Philadelphia and London: W. B. Saunders Company. 1914. Cloth, \$5.00; half morocco \$6.50.

It is not often that we have the privilege of reading a book which emanates from the staff of the Roosevelt Hospital; this one is written from the standpoint of the hospital physician to serve other physicians who are engaged in the performance of their professional duties. Dr. Thomson ever keeps the living patient in view, admitting at the same time that a large preliminary preparation is necessary before the patient can be viewed in the true light. The book begins with a discussion of the meaning of certain common but important symptoms. Remedies are considered with a classification according to the indications for their use. Then follows the portion which deals with infection by micro-organisms. The book closes with a consideration of diseases which are peculiar to the different organs and tissues. It is an ambitious work, and demands for its presentation a volume of nearly seven pages, beautifully printed, and well bound, as all Messrs. Saunders books are. Such symptoms as pain, emaciation, cough, dyspnoea, cedema, and vomiting are treated with a fullness which their importance deserves; and remedial measures are described under the headings of electricity, the action of cold, and of heat. The effect of change has a suggestive paragraph to itself. To give a catalogue of the various headings in the book would not serve in the slightest to indicate its value. It makes pleasant reading and the theme is relieved by much wise comment and many interesting observations. We would call especial attention to the section on drug habits and on epilepsy. The book is a credit to the hospital from which it comes, and will be of interest and value to the reader.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE. Volume VII., No. 7, May, 1914. Price 7s 6d net. London, Calcutta, Bombay and New York: Longmans, Green and Company.

THE MYTH OF THE BIRTH OF THE HERO (A PSYCHOLOGICAL INTERPRETATION OF MYTHOLOGY). By OTTO RANK, of Vienna. Monograph Series No. 18 of the Journal of Nervous and Mental Diseases. New York: Journal of Nervous and Mental Diseases Publishing Company, 1914.

MODERN MEDICINE ITS THEORY AND PRACTICE. IN ORIGINAL CONTRIBUTIONS BY AMERICAN AND FOREIGN AUTHORS. Edited by SIR WILLIAM OSLER, Bart., M.D., F.R.S., and THOMAS McCRAE, M.D. In five octavo volumes, illustrated. Volume III, Diseases of the Digestive System—Diseases of the Urinary System. Price per volume, cloth, \$5.00 net; half morocco, \$7.00 net. Philadelphia and New York: Lea and Febiger, 1914.

DISEASES OF THE RECTUM AND COLON AND THEIR SURGICAL TREATMENT. By JEROME M. LYNCH, M.D. Octavo, illustrated. Price, cloth, \$5.00 net. Philadelphia and New York: Lea and Febiger, 1914.

DISEASES OF INFANCY AND CHILDHOOD. THEIR DIETETIC, HYGIENIC, AND MEDICAL TREATMENT. By LOUIS FISCHER, M.D. Fifth edition. Philadelphia, F. A. Davis Company, 1914.

A HANDBOOK OF FEVERS. By J. CAMPBELL McCLURE, M.D. London: Shaw and Sons, 1914.

A CLINICAL STUDY OF THE SEROUS AND PURULENT DISEASES OF THE LABYRINTH. By DR. ERICH RUTTIN. Authorized translation by HORACE NEWHART, M.D. Illustrated. Price, \$2.00 net. New York: Rebman Company, 1914.

EXAMINATION OF THE URINE AND OTHER CLINICAL SIDE-ROOM METHODS. By ANDREW FERGUS HEWAT, M.B., Ch.B., M.R.C.P. Fifth edition. Price, 1s. 6d. net. Edinburgh: E. and S. Livingstone, 1914.

THE PRACTICAL MEDICINE SERIES COMPRISING TEN VOLUMES ON THE YEAR'S PROGRESS IN MEDICINE AND SURGERY. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., and ROBERT T. VAUGHAN, Ph.B., M.D. Volume I, General Medicine, edited by FRANK BILLINGS, M.S., M.D., and J. H. SALISBURY, A.M., M.D. Price, \$1.50. Volume II, General Surgery, edited by JOHN B. MURPHY, A.M., M.D., LL.D., F.R.C.S., F.A.C.S. Price, \$2.00. Volume III, The Eye, Ear, Nose and Throat, edited by CASEY A. WOOD, C.M., M.D., D.C.L., ALBERT H. ANDREWS, M.D., and WILLIAM L. BALLINGER, M.D. Price, \$1.50. Chicago: The Year Book Publishers, 1914. Price of series of ten volumes, \$10.00.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE, June, 1914. Volume 7, No. 8. Price, 7s. 6d. net. London, New York, Calcutta, Bombay: Longmans, Green & Company.

LOCAL ANÆSTHESIA. By ARTHUR SCHLESINGER, Berlin. Translated by F. S. Arnold, B.A., M.B., B.Ch. Illustrated, price, 5s. net. London: William Heinemann. New York: Rebman Company, Limited. Toronto: McAinsh & Company, Limited, 1914.

A TEXT-BOOK OF GENERAL BACTERIOLOGY. By EDWIN O. JORDAN, Ph.D. Illustrated, fourth edition, price, \$3.00 net. Philadelphia and London: W. B. Saunders Company. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

PUBLIC HEALTH LABORATORY WORK. By HENRY R. KENWOOD, M.B., F.R.S., D.P.H., F.C.S. Sixth edition, with illustrations. Price, 10s. net. London: H. K. Lewis, 1914.

ON DREAMS. By PROFESSOR DR. SIGM. FREUD. Translated by M. D. EDER with introduction by W. LESLIE MACKENZIE, M.A., M.D., LL.D. Price, \$1.00. London: William Heinemann. New York: Rebman Company, Limited. Toronto: McAinsh & Company, Limited, 1914.

A TEXT-BOOK OF MEDICAL DIAGNOSIS. By JAMES M. ANDERS, M.D. and L. NAPOLEON BOSTON, M.D. Second edition thoroughly revised. Illustrated. Price, \$6.00 net; half morocco, \$7.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

A TEXT-BOOK OF MILITARY HYGIENE AND SANITATION. By FRANK R. KEEFER. Illustrated. Price, \$1.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

COLLECTED PAPERS FROM THE RESEARCH LABORATORY PARKE, DAVIS & COMPANY, Detroit, Michigan. Reprints, Volume II, 1914.

THE SENSORY AND MOTOR DISORDERS OF THE HEART: THEIR NATURE AND TREATMENT. By ALEXANDER MORISON, M.D., F.R.C.P. Price, \$2.50. Toronto: McAinsh & Company, Limited, 1914.

THE POCKET FORMULARY FOR THE TREATMENT OF DISEASE IN CHILDREN. By LUDWIG FREYBERGER, J.P., M.D., M.R.C.S. Fourth revised and enlarged edition, adapted to the British Pharmacopœia with an appendix on poisons, their symptoms and treatment. Price, \$2.25. London: Wm. Heinemann. New York: Rebman Company, Limited. Toronto: McAinsh & Company, Limited, 1914.

ANOCI-ASSOCIATION. By GEORGE W. CRILE, M.D., and WILLIAM E. LOWER, M.D. Illustrated. Price, \$3.00 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

Res Judicatæ

PUBLIC HEALTH IN ONTARIO

THE Provincial Board of Health was established in the year 1882, when the first Public Health Act of the province was enacted. The Board with its secretary were for many years the sole public health workers in the province. Epidemics of smallpox and of various communicable diseases, the sanitary conditions of the province, the water supplies, sewage works and the care of lumber camp employees were controlled and supervised with the aid of occasionally employed medical students and young medical practitioners, through the indefatigable energies of Dr. Peter H. Bryce. In the year 1899, Dr. Charles A. Hodgetts, who since 1896 had been in the service of the Board, was appointed provincial medical inspector, and when Dr. Bryce resigned in 1904, to enter the immigration service at Ottawa, he was succeeded by Dr. Hodgetts, and Dr. R. W. Bell was appointed provincial inspector. During these later years several extensive outbreaks of smallpox in the newer portions of the province, typhoid fever in Fort William, Cobalt, and other places, left these officers with but little leisure. In 1906, Mr. George E. Young was appointed sanitary inspector for the province and upon him devolved much of the duty of looking after the hundreds of lumber, mining and railway construction camps in North-Western Ontario. These officers performed their duties in a fearless and most zealous manner and a great deal of credit is due them and to the members of the various provincial boards of health with whom they worked.

Since the laboratory of the Provincial Board was first established, under Professor J. J. Mackenzie, valuable services have been provided the medical practitioners of the province and the public generally, in relation to the diagnosis of typhoid fever, diphtheria, tuberculosis, and in the examination of water supplies. Professor Mackenzie was succeeded in 1900 by Dr. John A. Amyot, under whose direction the laboratory has grown from small beginnings to large dimensions. An experimental station was established for practical demonstration of water purification and sewage treatment.

The station and the laboratory continue to employ a considerable number of active scientific workers. In 1910, Dr. Hodgetts became medical adviser to the Conservation Commission of the Dominion of Canada and was succeeded by the writer, under whose régime the Public Health Act was revised and consolidated, a system of district officers established, and a provincial sanitary engineer, Mr. F. A. Dallyn, C.E., appointed.

The district officers were appointed under the Public Health Act of 1912, which provides that the province may be divided into ten districts to each of which a legally qualified medical practitioner may be appointed. These officials are full-time men and their salaries and expenses are paid primarily by the government, which is in turn recouped by the groups of counties embraced in the various districts. In the unorganized portions of the province the government pays its proportionate share of the expenses. At the outset the province was divided into seven districts.

All of these officers had been medical practitioners of first-class standing in the province, and before entering upon their duties had a course of training in sanitary work provided by the Provincial Board and the University of Toronto. Their duties are briefly set out in Section 13 of the Act as follows: "Every District Officer of Health shall within his district enforce this Act and the Regulations, and any other Act or Regulations respecting the health of the inhabitants of the district or their protection from communicable disease, and generally do within the district anything which a member of the Provincial Board, medical officer of health or sanitary inspector is authorized or required to do under this Act." While their special duties are confined to their respective districts, these officers are liable for duty in any portion of the province. They are under the control and supervision of the Board and report monthly or oftener as required. The jurisdiction of each of these officers being over such a large area, it seemed desirable that the earliest of their duties should be to gain an acquaintance with their respective territories as soon as possible. With this object in view information relative to the sanitary conditions of the various municipalities under their care was sought and classified as far as possible under the headings of a schedule. In this manner the acquaintance of the local officers, boards of health, municipal and county councillors was readily attained, and the coöperation of the various bodies secured. In all cases the officers report that there is a very marked demand for, and apparent appreciation of, their services, and in the short time during which they have been

in office the Board has received from numerous quarters expressions of appreciation of their work and approval of the legislation which has established this system.

In the short time during which these officers have been on duty they have performed valuable services in the province by their efforts in improving the sanitary conditions in numerous places; in assisting municipalities having outbreaks of communicable diseases; in advising local boards of health and local medical officers of health in difficult problems; in developing a demand for medical and sanitary inspection of schools; in spreading general sanitary knowledge in connection with the health exhibit lectures among the public and relieving in no small manner the executive of the Board of serious and difficult questions.

Were the territories of the district officers less extensive they could do better work, or at all events work which would at an earlier date show more fruit. The Board is satisfied, however, that a good beginning has been made, and that the intelligence of the great mass of our people needs only to be aroused, and supplied with knowledge of sanitary questions to make them alive to the value of a sound, sane, public health.

The good work which our men are doing will no doubt, before long, be the best reason for increasing their number.

The work done by the district officers has been ably supplemented by the various medical officers of health, who to the number of some seven hundred and fifty or more, serve usually for small remuneration the townships, villages, towns and cities of the province. It is regrettable that the good work done by the medical officers of health in smaller communities is so little appreciated and poorly paid. Some improvement, however, has been made by their permanency under the Act of 1912, and it is encouraging to see that a number of the municipalities have increased the remuneration during the past year.

During the past year a notable service was performed by the Provincial Board of Health in the investigation of the pollution of the waters of the Great Lakes. The International Joint Commission, comprising three representatives each from the United States and Canada had conceived the idea of making an investigation into the extent and degree of the pollution of the waters lying between the two countries, with the object of discovering if the sewage entering these waters travelled across the international boundary and was a source of injury to the citizens of one or other country. As the Province of Ontario from its geographical position,

lying as it does for some fifteen hundred miles along the United States frontier on these waters, was the most vitally concerned of any part of Canada, the Provincial Board was invited to offer suggestions as to the best method of procedure. Following this our Board offered to supply a sufficient number of qualified men for this work, providing the Commission paid the expense other than the salaries of these men. This offer was accepted and in April of last year eight men were detailed for this work. On the United States side a similar service was detailed by the United States Public Health Service and by the States of Michigan and New York. Some work was done by the Provincial Board of Health of Quebec. The work was continued from April till November of last year when it was completed. On our side the waters were examined all the way from the Rainy river to the St. Lawrence. The report of this, the most extensive series of water examinations heretofore made by any country, has just been published and will be a future mine of information upon this important subject.

The Board has now in operation three laboratories where free service is given to medical practitioners and the public in the diagnosis of typhoid fever, diphtheria, tuberculosis, rabies and in the examination of water supplies. These laboratories are located at Toronto, Kingston and London and will probably be supplemented by additional ones at an early date. A supply of outfits for this work is provided the various local medical officers of health for distribution among the medical men of each municipality. The laboratory also provides treatment of suspected rabies cases at cost and typhoid vaccine free of charge to all medical practitioners of the province who desire it for their practice.

Just lately the Board has been able to make arrangements for the supply of diphtheria antitoxin at greatly reduced prices. The people of the Province of Ontario have been paying outrageous prices for this product in the past, the cost being anywhere from 50 cents to \$2.00 per 1,000 units. In cities this valuable preventive and curative serum has been as a rule supplied free of charge to those unable to pay for it. These and the well-to-do have consequently not suffered inconvenience, but the middle class portion of our people, desirous of paying their way, have been seriously handicapped by the excessive price. The result of this is well illustrated by the death rate from diphtheria in Toronto. In the Isolation Hospital, where the cases are admittedly not of the mildest type, the death rate of last year was 6.5 per cent. In the city at large it was 16 per cent. By the plan adopted by our Board the

price has been reduced to 22 cents* in large quantities and 25 cents as a general rate. In syringe package the price is 10 cents additional. A great deal of credit is due the enterprise of the University of Toronto in establishing a laboratory for the manufacture of this and other bacteriological products. Already the provinces of Saskatchewan and Nova Scotia have followed the lead of Ontario in supplying antitoxin at these reduced prices.

Within the limits of a short paper it is impossible to do more than mention many of the evidences of the advance of public health in Ontario. Some of these are the public health and moving picture exhibit, for which there is an annual appropriation of \$7,000, the reduction of our tuberculosis rate from 148 to 90 per 100,000 in ten years, the greatly increased interest in public health matters, illustrated by a declaration of a public man in one of our largest cities, "Public health is my best campaign stuff, more valuable in an election contest than any other topic of discussion," and the fact that within the last two years five candidates have taken the Diploma of Public Health.

During the present year the legislature has confirmed the powers of the Board in reference especially to its control of water supplies. This is shown in its unanimous passage of a Bill in reference to the proposed water supply of the city of Ottawa; the Bill covering this declaring that the supply must be approved by the Board, and in the event of the Council of the Corporation of that city refusing to carry out the decision of the Board the latter is empowered to take over the whole matter, levy for the cost, and establish the works.

JOHN W. S. McCULLOUGH, M.D., D.P.H.

Toronto

Chief Officer of Health.

* Lately reduced to 20 cents.

It has been decided that the next meeting of the Ontario Medical Association will be held in Peterboro in May, 1915, probably in conjunction with the Medical Health Officers' Association. The names of the officers and of the committees, which have already been organized, will be found on another page.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

IN the August number of this JOURNAL there appeared an article referring to Dr. Mark Jansen's work "Das Wesen und das Werden der Achondroplasie" (Achondroplasia, its cause and nature). The latter is briefly reviewed in the *Muenchener Medizinische Wochenschrift* as follows: "Achondroplasia results from a tight-fitting amnion. The pressure of the amnion is capable of causing mechanical changes in the embryo. In the first embryonal stage (first and second week) it causes a crumpling of the embryo in its long axis and injury to the soft tissues. In the second stage (third to sixth week) it causes a rolling up of the embryo by pressure on the neck and buttocks, and inhibition to growth of the base of the skull, sacrum, and extremities. In the third stage the bones are already formed and the amniotic pressure hinders the growth of the concave side of the curved embryo. In the first stage occur deformities such as anencephalus; in the second stage achondroplasia; in the third stage deformities such as club foot. In fact the cause of many congenital deformities is thus suggested. Narrow amnion is a condition from which many families suffer in their pre-natal existence. The address is original and worth reading "

In an article dealing with salvarsan-serum in No. 14 of the *Muenchener Medizinische Wochenschrift* by an assistant in Neisser's clinic at Breslau these two questions are asked. (1) How long after an intravenous injection of salvarsan can one demonstrate substances in the blood that are therapeutically active? (2) Are these substances the remains of the injected medicament or do they play a somewhat specific role as antibodies? The author describes his experiments and answers the questions as follows. (1) After the injection of a relatively high dose of salvarsan there are chemical as well as biological substances still demonstrable in the blood stream for as long as seven days. (2) It is impossible that these substances are intact residual salvarsan, but would seem to be rather in the nature of oxidation products. Whether biological

antibodies come into play cannot be determined by animal experimentation.

In the *Muenchener Medizinische Wochenschrift*, No. 14, Mendl, of Brunn, describes an early sign of cerebral hæmorrhage. "In the early stage there is frequently a hyperæmia of one side of the face and head, accompanied by a congestive seborrhœa. The affected side of the face is then covered with a thin, fluid film of fat. The unilateral hyperæmia corresponds to the side of the brain where the hæmorrhage is occurring. In addition the hairs on the affected side of the head become erect, remain so for hours, and cannot be brushed flat. Finally the face becomes pale and sunken and the expression anxious; then the signs of hæmorrhage set in." The author lays great stress on the contraction of the muscoli arrectores pilorum and states that he bases the prognosis on this phenomenon.

TREATMENT OF FURUNCULOSIS IN CHILDREN BY THE THERMO CAUTERY. From Dr. Neisser's Clinic in Heidelberg. *Muenchener Medizinische Wochenschrift*, No. 14.

In November, 1911, was first published an article recommending the treatment of furuncles by the actual cautery. The author has had great success with this procedure, provided the condition was treated sufficiently early. The cautery destroys the nest of bacteria without opening the blood and lymph channels. "In children one does not see such definite, indurated boils as in adults, but rather several soft skin-abscesses which readily break down and quickly yield to the cautery treatment. A small crucial opening is made, and by reason of its being burned, not incised, the skin has not the same tendency to heal over too rapidly, and thus drainage is more easily established. Furuncles treated in this way show no infiltration by the third day and soon disappear, leaving only a small scar. After the surgical treatment we give the child a good washing with soft soap. Whether one should surround the abscesses with a ring of salve before opening is questionable, especially in practice, for, although it prevents the liberated pus from flowing over healthy skin, there is the danger of a mixture of pus and salve remaining which will get rubbed into the skin and result in the formation of fresh abscesses. In our clinic we merely dry off the pus, wash with soft soap, and lay some guaze over the opening, avoiding a bandage where possible so as not to irritate

the skin. In order to compare our method with the treatment by incision we made a point of incising some abscesses and cauterizing others in the same patient. In every case the cauterized lesions drained more readily and healed more rapidly than those incised. Moreover the pain is not severe and of but short duration."

In the *Monatschrift für Geburtshilfe und Gynaekologie*, Kreiss, of Dresden, reports the case of an infant with imperforate anus who passed meconium through the urethra. A laparotomy showed that there was not, as expected, a communication between bladder and bowel, but that the rectum emptied into the urethra. The rectum was separated and a plastic operation performed but the child died.

G. C. HALE.

London, Ont.

Obituary

DR. G. H. GROVES, of Carp, Ontario, died August 18th. Dr. Groves was born at Fitzroy in 1850, and graduated from McGill University in 1879. He at once went into practice at Carp and there continued his professional duties until last April. Dr. Groves was president of the Carleton County Conservative Associations for several years.

DR. T. HERBERT JACKSON, of Montreal, died at the Western Hospital on Sunday, August 23rd. Dr. Jackson had been in charge of hospital and medical work on the eastern division of the Trans-continental Railway.

DR. BRUCE LIVINGSTONE RIORDAN, of Toronto, died on Saturday, August 29th. Dr. Riordan was of Irish descent, and was born at Port Hope on March 17th, 1859. Before he was twenty-one, Dr. Riordan graduated from McGill University and, after spending nearly two years as ship's surgeon on the Allan boats, he took the necessary examinations at the University of Toronto, and, in 1881, went into practice at Toronto. He was appointed one of the twelve surgeons of the Grand Trunk Railway and soon built up an excellent practice. Dr. Riordan was a specialist in

traumatic surgery and was the recipient of many honours. He became chief surgeon of the York Radial Railway, divisional surgeon for Ontario of the Grand Trunk Railway, dean of the staff of Grace Hospital, consulting surgeon to the Toronto General Hospital, president of the Æsculapian Club, vice-president of the Ontario Medical Association, and president of the section of surgery of the Toronto Academy of Medicine. He leaves a widow and one son.

DR. FREDERICK E. THOROLD died at Kamloops, British Columbia, on Wednesday, September 1st, in the eighty-fourth year of his age. Dr. Thorold was born in England in 1830, and was a graduate of Kingston College, Hull. He came to Canada in 1851, and entered the Toronto School of Medicine. He continued to practise until 1880.

DR. FRED PARKER, of Stratford, Ontario, died July 11th, in the forty-ninth year of his age. Dr. Parker entered Trinity Medical College in 1891, and while there won the first scholarship in each year, the special prize in physiology in his first year, and the gold medal in his final year. He first went into practice at Bruce Mines, then at Milverton, and afterwards removed to Stratford. He had a large country practice and was an indefatigable worker.

News

ONTARIO

THE Hamilton Hospital by-law for \$125,000 was submitted to the ratepayers on August 17th last, and was defeated. It was the intention that the money, if voted, should be expended upon improvements to the city hospital. The plans for the new hospital are in progress. The cost will be about \$200,000. The building will be three storeys high and will contain accommodation for five hundred patients.

ONE thousand dollars has been contributed to the Patriotic Fund by the Toronto Academy of Medicine.

DURING the month of August, 715 cases of communicable disease were reported in the province; they were, smallpox, 6 cases; scarlet fever, 71 cases, 2 deaths; diphtheria, 172 cases, 10 deaths; measles, 148 cases, 2 deaths; whooping cough, 52 cases, 5 deaths; typhoid fever, 126 cases, 10 deaths; tuberculosis, 124 cases, 72 deaths; infantile paralysis, 11 cases; cerebrospinal meningitis, 5 cases, 5 deaths.

MEASLES has been very prevalent in Hamilton during the summer. The measures taken by the health authorities, however, have been successful in preventing further cases of the disease.

THE Essex County tuberculosis hospital at Union has been enlarged by the addition of a ward seventy-five feet long with accommodation for ten patients.

AT the recent meeting of the Clinical Congress of Surgeons, which took place in London, England, Dr. Herbert A. Bruce was elected first vice-president. Dr. Charles H. Mayo, of Rochester, Minnesota, is the president.

QUEBEC

THE *Congres des medecins de langue francaise de l'Amérique du Nord*, which was to have taken place at Quebec in September, has been postponed indefinitely on account of the war.

DR. E. S. AUBREY, of Hull, has been elected a governor of the College of Physicians and Surgeons of Quebec, to represent the counties of Ottawa, Labelle, Wright, and Pontiac.

DR. E. R. BROWN, of Montreal, has volunteered for active service with his regiment, the Fifth Royal Highlanders of Canada.

ALBERTA

AN outbreak of scarlet fever occurred in Calgary in July in which the cause of infection was rather unusual. The cases—twenty in number—were all infected through milk received from one dairy, where a young man was employed who was suffering from a slight attack of the fever. When the source of infection was discovered and the dairy premises closed and disinfected, no further cases were reported.

A HOSPITAL was opened at Grassy Lake on July 18th. It has been founded to provide accommodation for homesteaders in the district in cases of accident or illness. Contributions amounting to \$1,000 were made towards the hospital. The medical superintendent is Dr. L. K. Poyntz.

SASKATCHEWAN

SEVERAL of those who had promised to read papers at the recent meeting of the Saskatchewan Medical Association were unable to attend on account of having volunteered for active service. Surgeon Major H. E. Munro and Surgeon Lieutenant R. H. MacDonald, both of Saskatoon, are with the troops at Valcartier Camp.

SINCE there are only twenty-six hospitals in the province, with a total bed capacity of from eleven to twelve hundred, it is suggested that rural municipalities should join together in establishing hospitals and should each contribute towards them. A grant of fifty cents a day is made by the government for each patient and one dollar and fifty cents is allowed for patients who are unable to pay anything. The need is felt particularly in country districts and public meetings have been held recently by Dr. Seymour in order to encourage the building of such hospitals.

A CIRCULAR has been sent out by the provincial bureau of health to teachers in the province, requesting that occasionally they give lessons in matters of hygiene. Bulletins containing information on scarlet fever, typhoid fever, diphtheria, and smallpox accompanied the circular. It was requested also that teachers impress upon the pupils the necessity of conforming with the regulations recently made concerning drinking cups and towels.

THE plans have been prepared by the Department of Public Works for an addition to the Battleford Insane Asylum. The women's portion is large enough for requirements at present, but more accommodation is required for the male patients on account of the rapid increase in their number. The plans have been prepared for three additional units, but at present only one will be built. A warehouse, with refrigerating plant is to be built also; it will serve as a storage for provisions and a portion of it will be used as a tailor's shop for the making and repairing of patients' clothes.

It has been found necessary to suspend work on the sanatorium which is being built by the Saskatchewan Anti-tuberculosis League at Fort Qu'Appelle. The reasons for this action are found in the present financial stringency. Already \$150,000 has been spent on the buildings, which were to cost about \$225,000.

BRITISH COLUMBIA

A HEALTH by-law was recently passed by the Point Grey city council, Vancouver, which gives authority to the medical officer of health to isolate any person who, in his opinion, is suffering from tuberculosis.

THE Chilliwack Hospital is to be enlarged.

ON Wednesday, August 19th, a new surgical ward containing twenty-five beds was opened in the Vancouver General Hospital.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canadian Practitioner and Review, September, 1914:

Health problems in Canada	C. J. Hodgetts.
Personal experiences with radium . . .	W. H. B. Aikins.
Artificial pneumothorax in the treatment of tuberculosis	W. B. Kendall.
Public health in Ontario	J. W. S. McCullough.

Dominion Medical Monthly, September, 1914:

The histological and clinical changes induced by radium in carcinoma and sarcoma	W. H. B. Aikins and K. M. B. Simon.
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The Public Health Journal, August, 1914:

Public abattoirs	J. T. J. Vallance.
Conditions affecting the efficiency of sewage disposal works in Canada . . .	R. H. Murray.

Economics of sewage disposal	R. Potter.
Results of mechanical gravity filtration of Saskatoon	G. B. Clark.
The non-identity of modern leprosy and biblical leprosy	H. W. Hill.
President's address to the Canadian Association for the Prevention of Tuberculosis	Sir Adam Beck.
The legal aspect of sanitary inspectors' work	T. Watson.
The engineer and social service	S. Parry.
How may the medical health officer help the social worker	H. T. Falk.
The training of our orderlies	M. MacDonald.

L'Union Médicale du Canada, August, 1914:

Methodes modernes de combattre la tuber- culose, maladie des masses	M. S. Knopf.
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Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE fourteenth regular meeting of the society was held Friday evening, April 17th, 1914, Dr. D. F. Gurd, president, in the chair.

Dr. W. P. Northrup, of New York, professor of diseases of children at the New York and Bellevue School of Medicine, and visiting physician to the Presbyterian Hospital, addressed the meeting on the subject of "Fresh air treatment: the when, the how, and the wherefor." The following is a report of the address: "In speaking of good and bad air in sickness and in health I wish first to put myself right with you and to say that I do not want to appear loaded with coals for Newcastle; I have not come thinking to give you any points on the science of medicine here in this great centre of knowledge and teaching, but only a few words on a subject which is of vital interest to me. The old theory of bad air was of some chemical change; D'Arsonval and Brown Sequard contended that there was a breath poison, an anthropotoxin. Hermans maintained that the injurious effect was not from chemical changes, but

from an accumulation of body heat, warmth, and increased moisture about the body, hindering its cooling. Experiments were performed by Paul by putting different persons in glass cases under different conditions: he himself went into such a cabinet thirteen times. With the temperature kept low, say about 60°, and with absolutely no air admitted, he stayed in four and a half hours and suffered no inconvenience of any kind. He proved that it was not the air that they breathed. Raising the temperature of the air in the cabinet to 72° there were at once felt symptoms of acute suffocation, a band-like feeling around the head, oppression of the chest, dizziness, nausea and faintness, and a sense of falling—acute symptoms of poisoning. He could stay only ten minutes in this high temperature when he began to feel these striking symptoms. He now established that it was the *Warmestauung* or accumulation of heat around the body which gave the acute poisonous effect, and this was due to three elements, *heat, moisture, and stagnation*: the same conditions you have noticed on a sultry day in summer before a thunder storm.

“In order to find out whether there was such a thing as breath poisoning, in one experiment, where the degree of temperature was high and the person in it suffering from the symptoms mentioned, he was allowed to breathe the outside air for some time, but it had no effect upon his symptoms. As an illustration of stagnation forming one of the causes of the bad effects, while a labourer was in the cabinet suffering from this ‘poisoning’ a revolving fan was started inside the cabinet and the man said he felt much better and thought they had opened the door. In other words the air was stirred up around the body and the difference was such that evaporation would go on and he was cooled down. These classical experiments were most elaborately carried out. All grades of heat, moisture, and stagnation were tested on the person in the cabinet. For instance he wanted to determine whether there was not some exact method of testing the heat storing or heat accumulation of the body. By a very delicate electrical thermometer placed on the brow and under the man’s clothing, he could test and by actual measurement found that the man’s temperature went up two or three degrees before there were distinct symptoms. If a lady faints in the theatre, for instance, it is not in the first or last act, but somewhere about the middle she experiences these sensations of acute poisoning—suffocation, etc. When she enters she is more or less cool, the room has not yet the accumulation of moisture from the bodies of those present and the temperature is fairly low. About the last half of the second act that lady will faint. We take

her to a window and let the cool air blow on her and the result is that she revives; the steam jacket that has been around her is displaced by the cool moving air; the same thing would be accomplished by the vigorous use of a large fan.

"Another illustration is that of a professor, a mountain climber, who with his guides and helpers arrived one night at a half-way cabin where they all turned in, shut everything up tight and slept well. Very early the professor woke up and went outside. Returning he was struck with the extreme stuffiness of the cabin and hurried to waken the sleepers, who did not like being disturbed. Here no ill effects were experienced because the temperature was low; had it been high through the night, however, considerable discomfort and headache would have resulted if nothing more serious. Lower sleeping berths in over-crowded cars are another example of 'stuffiness' with consequent headache in the morning. An example of living conditions with cool air indoors is that of a neighbour of mine whose house was exposed in the cellar on account of excavations in the lot adjoining, and who could not use the furnace on account of holes in the wall where 'needles' penetrated in order to support the wall. All their friends expected that those in the house would be ill with sore throats, colds, and even pneumonia, but the result was that they never passed a more healthful winter, in spite of the fact that the air in the house was not what would be called fresh air, but it was of a uniformly low temperature.

An interesting fact in connexion with the taking of cold through changes of temperature is that those with dry skins are not susceptible. For instance, in climbing the Himalayas, guides and tourists wear a combination garment of blanket and overcoat which is belted at the waist. In climbing the mountain, on its sunny side, the upper part of this garment is let down over the rope or belt at the hips and many indeed even strip everything to the waist in order to arrive at the top dry skinned. When this is accomplished they draw on their garments, which are dry, and no chill is experienced. The top atmosphere of these lofty mountains is cold and clear and rapid unwarming of the body produces a chill and frequently pneumonia.

"A very interesting human experiment in bad air was that of the tragedy of the Black Hole of Calcutta in 1756. A report of this appeared in the *Annual Register* for 1758, the seventh edition was printed in London in 1783, copies of which I saw in Andrew D. White's library in Syracuse, N.Y., and in the Lenox Library. The story must be familiar to you all. The place was Calcutta,

Bengal, in mid-summer, where the heat is difficult for Europeans to endure under most favourable circumstances—the constant waving of fans night and day, etc. The ruler was incensed because a wealthy merchant had been unjustly imprisoned by one Drake who had large factories in the town in which were employed Englishmen. The Viceroy or Suba was a degenerate drunken young man and was possessed of the idea that much treasure was to be found in these works. He therefore laid siege to the place. Drake disappeared, and one Holwell took charge of the defence. They were obliged to surrender and were given assurance that no harm would come to them and the men were turned over to the sergeants for guards. The prisoners were gathered on the piazza and at night were driven into a room about eighteen feet square and twelve feet high, one hundred and forty-five men and one woman, the soldiers could barely pack the last man in. There were two iron-barred windows and they were on the side away from the prevailing wind. Inside the room was a platform about six feet wide and four feet high. The men were placed in this room at eight o'clock in the evening on a close sultry night, even for Bengal, and when released at six o'clock next morning only twenty-three had survived. Holwell, who wrote an account of his experience in this room, was the first to enter and went straight to one of the windows. Before nine o'clock (one hour) the occupants were in a desperate state—profuse perspiration and raging thirst. They removed their clothes, this gave them relief for a moment, they waved their hats thinking to produce a current of air, they tried squatting down so that they would have more air above and possibly more breathing space. During this experiment many were so weak that they were unable to rise again and were trampled to death or suffocated. During the second hour the thirst became intense, respiration was difficult and some became delirious. Holwell standing by the window now began to feel the same symptoms of thirst and difficult breathing and the atmosphere in the room became charged with 'a strong urinous volatile effluvia' and there was a constant cry for water. Water was conveyed into the room in hats forced through the bars of the windows, but most of it was spilled owing to the crazed state of the men, but even those who got a little found that it did not help much. By eleven o'clock one-third of the occupants of the room were dead. Holwell worked his way from the window where he had been jammed by those behind trying to get at the window for the water, and crossing over the dead to the other side of the room lay down on the platform to die.

"All this time the guards dared not waken the drunken ruler and it was not until six o'clock the next morning that they reported to him the desperate condition of affairs. He then sent word to open the doors and search for Holwell. After some difficulty (so great was the pressure of bodies against the door) this was done and, after considerable search, Holwell was found on the platform under several bodies in an unconscious condition. When brought before the ruler he could not speak so great was his exhaustion, though he tried to explain that they had no treasure. Holwell mentions that the steam and stench from both the dead and the living bodies was insufferable and that about two a.m. he was sensible of no pain and only a little uneasiness and fell into a stupor.

"This constitutes a rare experiment on bad air as well as a wonderful lay record. Paul's experiments go to show that these people did not die of poisoning by the breath, but from the conditions of heat, moisture, and stagnation—body-heat accumulating.

"What is good air? A good air is a cool air. All human beings in health are continuously making and radiating heat, they must be able to part with it largely by evaporation of the moisture, the heat radiating into a medium which is ready to receive it. There must not be a steam jacket immediately about the body; it must be dispersed by motion. Health requires cool, fresh, flowing air.

"I contend that cold is an important part in the fresh air treatment of various diseases. Cold, fresh, flowing air furnishes the main stimulating element in winter that is lacking in the summer. In the Children's Service at the Bellevue Hospital the cold fresh air treatment for pneumonia was carried out extensively with excellent results. To quote from Howland and Hoobler: 'The effect of cold fresh air on patients with pneumonia was always to produce a rise in blood pressure and on removal to a warm but well ventilated ward, a fall in blood pressure. The rise is not apparent until half an hour or more, sometimes an hour, after being put out of doors and it does not reach the maximum for about two hours. Thereafter the effect, as far as we have observed, is continuous for even as long as thirty hours and we have not observed any tendency for the pressure to fall as if from exhaustion of the effect. On the other hand, after removal from cold, fresh air, the blood pressure falls rapidly; the fall is apparent in fifteen or twenty minutes and usually reaches its lowest point in an hour, to remain at this minimum unless influenced by the course of the disease, by stimulation, or by the child being again placed out of doors, when it rises again. . . . We have been unable to produce results

by putting children out of doors in warm weather, therefore the all-important factor is the cold—a reflex stimulation of the vasomotor centre by the action of cold air on the skin of the face and on the nasal mucous membrane, a constant and continuous effect, the pressure remaining at a higher level for hours, showing no tendency to fall, and even after a return to the ward it does not fall to a point below that previously obtaining at the ward temperature. There can be no doubt that when the pressure is abnormally low an increase in this, which is accomplished without disturbance or irritation, which is constant and continuous, and which causes no exhaustion or bad effects, is of the greatest value. We have observed no bad effects on the circulation nor have any been reported, notwithstanding the prevalence of the cold air treatment of pneumonia and the lack of selection of patients to be treated by this method.'

"I have been asked over and over again what percentage of pneumonias get well on this treatment, but I have refused to give figures, the number of cases being insufficient. All I ask of anybody is to try it and they will not go back to the other treatment. Put the child out and if it becomes rosy and calm and goes to sleep, takes its food, has a better tongue and recovers, you do not need to explain this. The air, moreover, should be cold, fresh, flowing air. A baby with a dry skin never catches cold. In connexion with the subject of dry skin we are all now coming to wear much lighter clothing in the winter time—no more heavy Scotch flannels and consequently no steam jacket or moist skin with subsequent cold when exposed to a lower temperature. In outdoor sleeping it is exceedingly important that the clothing beneath the patient be quite as much as that above. Another thing is that the patient should wear a union suit so that in turning over no part of the skin would be exposed."

Dr. Northrup exhibited pictures of patients undergoing the cold fresh air treatment on the roof of the Presbyterian Hospital, showing the arrangement of cots, etc.

DISCUSSION: Dr. W. F. Hamilton: I have been much interested in Dr. Northrup's remarks and in reply to his question concerning our procedure in Montreal, I may say that we have little difficulty in this country in securing cold air for the treatment of pneumonias during the winter. In the Royal Victoria Hospital, outside the wards are verandahs on which such patients may be placed, but during the months of January, February, and March, we content ourselves with the side rooms of the ward, each of which has two

windows which are kept wide open and through which moving, as well as cold, air can easily be obtained. In private practice we follow this principle of fresh air fairly closely. I am interested in the statistics of pneumonia and I am sure some day Dr. Northrup will give us his. We have looked up to Dr. Northrup for encouragement to persist with this measure and if this method is effective a marked reduction in the percentage of mortality will eventually be recorded. At present I am despairing of doing much, if any, good in pneumonia, and to make a record as they are found in the books on medicine, compiled from thirty to forty years' records, one will find that the mortality averages 19 per cent., 20 per cent. or 21 per cent.; if you take statistics extending over eighteen or twenty years, as in the Royal Victoria Hospital where we have treated over eight hundred cases of lobar pneumonia, it is 19·7 per cent. These figures to my mind are very significant of the futility of treatment. If one remembers the fact that these figures express the experience of the European, American, British, and Canadian, and that these patients have been treated by methods most various, it is significant, I think, that treatment so far has had little to do with recovery or fatality. I hope that when the fresh air record is figured out the percentage of mortality will be 15 per cent. or even 10 per cent.

Dr. A. D. Blackader: At the present day all physicians appreciate the value of cold air. The treatment of tuberculosis has taught us what a powerful remedial agent pure cold air may be. The effects on the body of cold air are two-fold. There is an actual abstraction of heat, which is rarely desirable, and which so far as possible should be prevented. This loss takes place to a slight extent only by evaporation, perhaps somewhat more by radiation; the chief loss is by convection, and is dependent upon the amount of moisture in the air, and on the rapidity of its movement. On a clear, bright frosty day with but little wind and the temperature many degrees below zero, a person properly clad loses little heat by any of these methods, and may spend a long time out of doors without any unpleasant sensation of cold. On the contrary when a moist east wind blows, even with the thermometer many degrees above the freezing point, heat is easily abstracted and every one suffers from depressing chilly sensations.

More important from the therapeutic standpoint is the second effect: i.e. the stimulating action of dry cold air on the delicate sentient nerves of the periphery, and just as a cold bath to a vigorous man is a source of energy, so cold frosty air to a man with an

active vasomotor centre is a powerful stimulant to cardiac, respiratory and muscular systems; oxidation is increased and nutrition becomes more active. As has been pointed out by Sewall, of Denver, the free flowing, frequently changing air of the open, is undoubtedly one of the most powerful stimuli which we have on our vasomotor centres. I am glad to hear Dr. Northrup refer to the experiments of Howland and Hoobler on the effect of cold air on the blood pressure in pneumonia. Its chief influence appears to be exerted on the delicate nerves of the Schneiderian membrane and from them to be transmitted promptly to the vasomotor centre. The reflex from the Schneiderian membrane has long been recognized as a prompt and powerful method of securing stimulation in an emergency and it is therefore important for us to know that we can secure a very definite stimulation to flagging centres by the inhalation of cold air through the nostrils. But the cold air must be inhaled through the nostrils to secure this stimulation. No stimulation and only harm results when the patients breathe the cold air through the mouth. Especially is this the case in children—children that keep their mouths shut and breathe through the nose, provided they are warmly clad, enjoy our frosty air and receive benefit from it; but a child with obstructed nares, that breathes through its mouth, finds the cold dry air to be an irritant to its mucous membrane which may readily excite a laryngitis or bronchitis.

ONTARIO MEDICAL ASSOCIATION

THE next meeting of the Ontario Medical Association will be held in Peterboro in May, 1915. Arrangements are now being made to have this annual meeting in conjunction with the Medical Health Officers' Association, so that the attendance will be large, and members will be sure of reduced fares on the railways.

The following is a list of the committees:

President, D. J. Gibb Wishart, Toronto; general secretary, F. Arnold Clarkson, 421 Bloor Street West, Toronto; local secretary, J. E. Mann, Peterboro.

Committees

ARRANGEMENTS: T. W. H. Young, chairman; N. H. Sutton, secretary; J. H. Eastwood, D. C. King, B. E. Kelly, of Peterboro;

R. H. Bonnycastle, Campbellford; H. A. Turner, Millbrook; W. A. Ross, Barrie; J. Holdcroft, Havelock; W. G. Collison, Lindsay.

PAPERS AND BUSINESS: H. J. Hamilton, Toronto, chairman; G. S. Cameron, Peterboro, vice-chairman; George S. Strathy, Toronto, secretary; A. W. McPherson, Peterboro, local secretary; T. N. Greer, J. A. Morgan, J. V. Gallivan, J. M. McCulloch, and D. N. Carmichael, Peterboro; and the chairmen and secretaries of the sections, as follows:

SURGERY: C. L. Starr, Toronto, chairman; F. P. McNulty, Peterboro, local chairman; A. Moorehead, Toronto, secretary; E. V. Frederick, Peterboro, local secretary.

MEDICINE: A. R. Gordon, Toronto, chairman; F. C. Neal, Peterboro, local chairman; George S. Strathy, Toronto, secretary; L. S. Hammond, Peterboro, local secretary.

OBSTETRICS AND GYNÆCOLOGY: W. D. Scott, Peterboro, chairman; A. Moir, Peterboro, secretary.

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EXECUTIVE: The president, secretary, and treasurer *ex-officio*; G. S. Cameron, Peterboro; R. R. Wallace, Hamilton.

NECROLOGY: J. H. Elliott, Toronto, chairman; W. H. Cameron, Conniston; Lorne Robertson, Stratford.

AUDIT: J. A. Amyot, Toronto, chairman; G. Boyd, Toronto; J. M. Rogers, Ingersoll; E. E. Harvey, Norwich; A. McKinnon, Guelph; C. Meyers, F. N. G. Starr, R. J. Wilson, Toronto; D. E. Mundell, Kingston; F. Williams, Bracebridge.

SANITARY INSPECTORS' ASSOCIATION OF WESTERN
CANADA

THE second annual meeting of the Sanitary Inspectors' Association of Western Canada was held at Winnipeg on Wednesday, Thursday, and Friday, July 15th to 17th, last. On Wednesday morning, a civic welcome was given to the members by the mayor, Mr. T. R. Deacon, and by Mr. Munroe, chairman of the health committee: this was followed by the presidential address, which was delivered by Mr. E. W. J. Hague. The most important feature of the meetings was a series of visits of inspection and the convention closed on Saturday morning with a visit to Kinalmeaky Farm. The object of the association is to improve sanitation throughout the province and to raise the status of the sanitary inspector, and in order to achieve the latter purpose an effort is being made to enroll as many associate members as possible and encourage them to take the examinations of the Royal Sanitary Institute of London. Good progress has been made during the past year and the membership now includes forty-six members and thirty-eight associate members. Since the first annual meeting of the association, which took place at Regina in September of last year, an examination board of the Royal Sanitary Institute has been established at Winnipeg. A library has also been established there, consisting of books on sanitation in its different branches and current magazines dealing with sanitary matters. It is probable that a branch of the Institute may be established in Calgary before very long, as it is impossible for many of those who otherwise would take the examinations to go to Winnipeg for that purpose. In Saskatchewan fortnightly meetings were held during the winter months at Regina, Moose Jaw, and Saskatoon, at which subjects in the syllabus of examination were taken up and lectures of practical interest to the sanitarian were given. The question of the dismissal of inspectors was discussed at the meeting and it was considered that such dismissals should be subject to the approval of the provincial board of health. The matter was referred to the executive committee.

SASKATCHEWAN MEDICAL ASSOCIATION

THE eighth annual meeting of the Saskatchewan Medical Association, which was held at Saskatoon, August 18th, 19th, and 20th, was avowedly the most successful gathering ever held by the

association, and reflects great credit upon the president, Dr. Peterson, and the secretary, Dr. J. T. MacKay. After the reception and registration of members, the reports of the various committees were submitted. Among these, that of Dr. A. Wilson, chairman of the committee on public health, was of particular interest. It was based on the replies received from the secretaries of the rural municipalities in the province, to whom a set of questions had previously been sent. A committee was appointed to discuss the matter and they submitted the following recommendations which, it was agreed, should be forwarded to the minister in charge of public health at Regina: "Resolved that the province of Saskatchewan be divided into four or more health districts, each under the supervision of a fully qualified health officer, under the direction of the provincial public health department: that the above officers be required to devote their entire time to the health matters within their respective districts, and that at least one nurse be engaged for each district under the supervision of the district medical health officer." It was considered that the province of Saskatchewan had now reached such a stage in its development that the management of the details of public health work in all parts of the province necessitated some such arrangement as the above. The local health organizations should be more conversant with all matters pertaining to public health in their municipality, and the local health officers should be trained for the special work they undertake and should devote their whole time to it; moreover, the great distances from which the food and milk supplies are brought make it all the more important that they should be subject to careful and expert examination. The distribution of physicians in rural districts is by no means uniform and a large section of the province is without adequate medical service. It was thought that these matters might be remedied were the proposed recommendations put into practice, and that the deportation of undesirables would be facilitated and a more prompt and efficient service be obtained from the local organizations.

On invitation Mr. W. J. Thompson, a director at large of the Grain Growers' Association, addressed those present. Instances had occurred during the past year in which the local Grain Growers' Associations had supported the claims of men who alleged that they had been overcharged by members of the medical profession. The matter had been discussed somewhat freely in the public press from the layman's point of view; the other side was now presented to Mr. Thompson and it was arranged that the president of the medical

council should appoint an official representative whose duty it should be to attend each meeting of the Grain Growers' Association, so that matters of common interest might be amicably arranged.

The papers read at the conference were interesting and were followed by discussions involving a wide range of opinions. Of particular merit were those by Dr. A. R. Gordon, of Toronto, on "The damaged heart and its management;" by Dr. J. M. Elder, of Montreal, on "The acute abdomen;" by Dr. C. G. Sutherland, of Moose Jaw, on "The future of our profession;" and by Dr. W. R. Tutt, assistant superintendent of the North Battleford Asylum, on "The immigration problem."

The officers elected for the ensuing year are, honorary president, Dr. G. R. Peterson, Saskatoon; president, Dr. G. P. Bawden, Moose Jaw; first vice-president, Dr. F. A. Corbett, Regina; second vice-president, Dr. A. Croll, Saskatoon; secretary-treasurer, Dr. C. G. Sutherland, Moose Jaw, Executive council, Dr. T. M. Leask, Moose Jaw; Dr. J. W. Turnbull, Regina; and Dr. J. H. Storry, Tuxford. It was decided that in future the annual meetings of the association should be held on the last Tuesday in July. The next meeting will take place at Moose Jaw.

ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

THE fourteenth annual convention of the Canadian Association for the Prevention of Tuberculosis, held in Halifax on July 13th and 14th, was one of the most successful in the history of the society. In point of attendance, in the quality of papers presented, and in the reports from local societies it was most encouraging. In the unavoidable absence of the president, Sir Adam Beck, his address was read by the secretary. In it the president took occasion to congratulate the Federal Government upon its new measure directed towards the prevention of the spread of tuberculosis amongst cattle supplying milk to dairies.

The public lecture in the evening by Dr. A. S. Knopf, of New York, was largely attended and well received. Among other prominent men upon the platform was the Honourable Mr. Armstrong who spoke on behalf of the Premier of the province. He mentioned the fact that legislation was being enacted in Nova Scotia aiming towards the suppression of tuberculosis and providing for more accommodation for the tuberculous in that province.

In the symposium upon legislative action Dr. Bruce Smith,

Dr. W. H. Hattie, Dr. A. F. Miller and Dr. Smith L. Walker presented papers which were discussed by Sir James Grant, Drs. Montizambert, Bryce, Hodgetts, J. W. S. McCullough, Parsons, John Stewart, J. B. Black, and others. Dr. J. Roddick Byers and Dr. J. H. Elliott presented papers upon "milk" and "bovine tuberculosis." Dr. Gordon, of Ottawa, upon the "care of advanced cases," and Miss Eunice Dyke, of Toronto, upon the "tuberculosis nurse."

The secretary's report, which covered the work done in Canada during the year, showed that more progress had been made than in any previous year. No less than nine new institutions for the tuberculous had been opened during the year, while much educational work had been accomplished.

Among other resolutions passed at the meetings was one calling upon the federal authorities for the formation of a Public Health Department. A resolution was passed at the Executive Council in favour of the association meetings being held in the same place as those of the Canadian Medical Association, either immediately preceding or following the same. The delegates were well looked after in a social way, the sail around the harbour and motor drives being most enjoyable.

The officers elected for ensuing year were: president Colonel Jeffrey H. Burland, Montreal; honorary treasurer, George Burn, Esq., Ottawa; secretary, George D. Porter, M.B., Toronto.

PRINCE EDWARD ISLAND MEDICAL ASSOCIATION

THE annual meeting of the Prince Edward Island Medical Association was held at Charlottetown on Thursday, July 16th, about twenty members being in attendance. The reading of the reports of committees was followed by the election of officers for the year 1914-1915; they are, president, Dr. J. Jardine; treasurer, Dr. Conroy; secretary, Dr. J. C. McDonald. In the afternoon the members were taken by motor boat to Falconwood, where the afternoon session was held. The presidential address was delivered by Dr. W. J. McMillan, who spoke on the relation of the medical profession to public health. He thought that much might be done by physicians to further the cause of public health and sanitation, even though they reaped no pecuniary advantage from so doing. Deploring the unfortunate lack of interest manifested throughout the province in the matter of statistics, Dr.

McMillan impressed upon those present the importance of vital statistics and of the prompt notification of cases of contagious and infectious disease. Another topic touched upon by the president was the medical inspection of schools; as yet there is no such system in Prince Edward Island. He strongly advocated the establishment of such inspection and thought that great benefit might accrue to the pupils if lectures on hygiene and sanitation were given in the schools by competent medical men. The proposal to establish a provincial pathological and bacteriological laboratory in the province, he said, was now under consideration by the government. In conclusion, Dr. McMillan referred to the work accomplished by Sir Thomas Roddick in connexion with the new Canada Medical Act and suggested that a vote of congratulation be sent to Sir Thomas upon his well-merited knighthood. The address was followed by a paper by Dr. Goodwill on dementia præcox, and one by Dr. Tanton on lung abscess. At the evening session some interesting papers were read. Next year the association will meet at Summerside.

NEW BRUNSWICK MEDICAL SOCIETY

THE thirty-fourth annual meeting of the New Brunswick Medical Society was held in St. John on July 21st, as required by statute. On account of the Canadian Medical Association having recently met there, the provincial society abandoned its usual scientific programme and simply transacted necessary business.

Officers were elected as follows: president, Dr. G. C. Van Wart, Fredericton; first vice-president, Dr. G. W. Fleming, Petitediac; second vice-president, Dr. W. W. White, St. John; secretary, Dr. D. C. Malcolm, St. John; treasurer, Dr. C. M. Pratt, St. John; trustees, Dr. H. E. Gillmor, St. Martins; Dr. W. A. Christie, St. John; Dr. B. H. Dougan, Harvey.

Delegates to Executive of the Canadian Medical Association: Dr. J. S. Bentley, St. John, and Dr. C. T. Purdy, Moncton; members of the Council of Physicians and Surgeons of New Brunswick: Dr. J. D. Lawson, St. Stephen; Dr. W. W. White, St. John; Dr. L. M. Curren, St. John; Dr. A. F. Emery, St. John; Dr. T. F. Sprague, Woodstock. It was decided to hold the next annual meeting in Fredericton.

MEDICAL HEALTH OFFICERS OF NOVA SCOTIA

WE are requested by Dr. Bryce to correct an error in the report of his remarks at the meeting of the Medical Health Officers of Nova Scotia, held in Halifax, July 15th. The reports states, "Dr. Bryce states that the death rate of Nova Scotia was just double that of Ontario." Dr. Bryce wishes it to be understood that the remarks he was making at the moment referred to tuberculosis. He finds the actual figures as given in the last report available for Ontario of deaths from tuberculosis per thousand 1'02 while the death rate for five years in Nova Scotia preceding 1913 was 1'79. The statement for the whole province is too high, but the error is one which perhaps is excusable in a general reference rather than a statistical reference.

VALLEY MEDICAL SOCIETY

THE Valley Medical Society met at Bear River, Nova Scotia, September 7th. The annual meeting of the society was held at Middleton on June 12th. On this occasion the reports of the president and the secretary-treasurer were presented and the officers for the year 1914-1915 were elected: they are, president, Dr. M. E. Armstrong, Bridgetown; vice-presidents, Kings County, Dr. A. S. Burns, Kentville; Annapolis County, Dr. R. L. Morse, Lawrencetown; Digby County, Dr. T. H. MacDonald, Meteghan; secretary-treasurer, Dr. W. T. M. MacKinnon, Berwick.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Dr. Murray MacLaren, St. John, N.B. President-elect—Dr. R. E. McKechnie, Vancouver. Secretary-treasurer—Dr. W. W. Francis, 836 University Street, Montreal.

Annual Meeting, Vancouver, B.C., 1915.

ACADEMY OF MEDICINE, TORONTO:—President—Dr. H. B. Anderson. Secretary—Dr. J. H. Elliot.

ALBERTA MEDICAL ASSOCIATION:—President—Dr. R. G. Brett, Banff. Secretary—Dr. F. C. Clarke, Calgary.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. J. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.

CALGARY MEDICAL SOCIETY:—President—Dr. G. Johnston. Secretary—Dr. J. L. Allen.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—Dr. J. G. Adami, Montreal. Secretary—Dr. George D. Porter, Ottawa.

CANADIAN HOSPITAL ASSOCIATION:—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. N. E. Brown, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—Dr. C. A. Hodgetts. General Secretary—Major Lorne Drum.

CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY:—President—Dr. J. S. Murray, Okotoks. Secretary-treasurer—Dr. G. E. Learmonth, High River.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—Dr. J. W. T. Patton, Truro. Secretary—Dr. H. V. Kent, Truro.

EDMONTON MEDICAL SOCIETY:—President—Dr. J. S. Wright. Secretary-treasurer—Dr. Jamieson.

ELGIN COUNTY MEDICAL ASSOCIATION:—President—Dr. Frederick McEwen, Aylmer, Ont. Secretary-Treasurer—Dr. A. B. Riddell, Bayham.

FRASER VALLEY MEDICAL SOCIETY:—President—Dr. De Wolfe Smith. Secretary—Dr. D. F. Carswell.

HALIFAX MEDICAL ASSOCIATION:—President—Dr. Kirkpatrick. Secretary—Dr. MacIntosh.

KINGSTON MEDICAL AND SURGICAL SOCIETY:—President—Dr. W. G. Anglin. Secretary—Dr. W. T. Connell. Treasurer—Dr. G. W. Mylks.

LONDON MEDICAL ASSOCIATION:—President—Dr. C. H. Reason, 538 Dundas Street. Secretary-treasurer—Dr. L. S. Holmes, 260 Hamilton Road.

LUNENBURG-QUEEN'S MEDICAL SOCIETY:—President—Dr. J. W. Smith, Liverpool. Secretary—Dr. L. T. W. Penney, Lunenburg.

MANITOBA MEDICAL ASSOCIATION:—President—Dr. H. A. Gordon, Portage La Prairie. Secretary—Dr. R. B. Mitchell, Winnipeg.

MEDICINE HAT MEDICAL SOCIETY:—President—Dr. O. Boyd. Vice-President—Dr. H. Orr. Secretary-treasurer—Dr. W. Knight.

MONTREAL MEDICO-CHIRURGICAL SOCIETY:—President—Dr. D. F. Gurd. Secretary—Dr. Hanford McKee.

MOOSE JAW MEDICAL SOCIETY:—President—Dr. Geo. P. Bawden. Secretary-treasurer—Dr. C. G. Sutherland.

NEW BRUNSWICK MEDICAL SOCIETY:—President—G. Clowes Van Wart, Fredericton. Secretary—J. S. Bentley.

NIAGARA DISTRICT MEDICAL ASSOCIATION:—President—Dr. E. T. Kellam, Niagara Falls. Secretary—Dr. G. M. Davis, Welland.

NOVA SCOTIA MEDICAL SOCIETY:—President—Dr. G. E. DeWitt. Secretary—Dr. J. R. Corston.

ONTARIO MEDICAL ASSOCIATION:—President—Dr. D. Gibb Wishart, Toronto. Secretary—Dr. F. A. Clarkson, 421 Bloor Street West, Toronto. Local Secretary—Dr. J. B. Mann, Peterborough.

Annual Meeting, Peterborough, May, 1915.

OTTAWA MEDICO-CHIRURGICAL SOCIETY:—President—Dr. J. F. Argue. Secretary—Dr. R. K. Paterson. Treasurer—Dr. A. S. McElroy.

OTTAWA MEDICAL SOCIETY:—President—Dr. Charles W. Gorrell. Secretary—Dr. A. MacLaren. Treasurer—Dr. Harold Alford.

PERTH MEDICAL ASSOCIATION:—President—Dr. A. F. McKenzie, Moncton. Secretary-treasurer—Dr. F. J. R. Forster, Stratford.

PETERBORO MEDICAL ASSOCIATION:—President—Dr. E. A. Hammond. Secretary—Dr. J. B. Mann.

PICTOU COUNTY MEDICAL ASSOCIATION:—President—Dr. C. S. Elliot, Stellarton. Secretary—Dr. John Bell, New Glasgow.

PRINCE EDWARD ISLAND MEDICAL ASSOCIATION:—President—Dr. A. A. MacDonald. Secretary—Dr. W. J. MacMillan, Charlottetown.

REGINA MEDICAL SOCIETY:—President—Dr. Gorrell. Secretary—Dr. Dakin.

ST. JOHN MEDICAL SOCIETY:—President—Dr. D. Malcolm. Secretary—Dr. F. P. Dunlop.

SASKATCHEWAN MEDICAL ASSOCIATION:—President—Dr. G. P. Bawden. Secretary—Dr. C. G. Sutherland, Moose Jaw.

Annual meeting, Moose Jaw, July 27th, 1915

SASKATOON MEDICAL ASSOCIATION:—President—Dr. Geo. R. Morse. Secretary-Treasurer—Dr. R. H. MacDonald.

SWIFT CURRENT DISTRICT MEDICAL ASSOCIATION:—President—Dr. Graham. Secretary-treasurer—Dr. Hughes.

THUNDER BAY MEDICAL SOCIETY:—President—Dr. R. J. Manion. Vice-President—Dr. Eakins. Secretary-treasurer—Dr. J. G. Hunt.

VALLEY MEDICAL SOCIETY:—President—Dr. M. E. Armstrong, Bridgetown. Secretary—Dr. T. M. MacKinnon, Berwick, N.S.

VANCOUVER MEDICAL ASSOCIATION:—President—Dr. W. D. Keith. Secretary—Dr. J. H. MacDermot.

WEST ELGIN MEDICAL SOCIETY:—President—Dr. Crane, Wallacetown. Vice-president—Dr. Webster, West Lorne. Secretary-treasurer—Dr. Smith, Fingal.

WINNIPEG MEDICAL SOCIETY:—President—Dr. J. R. Jones. Secretary—Dr. S. Alwyn Smith.

The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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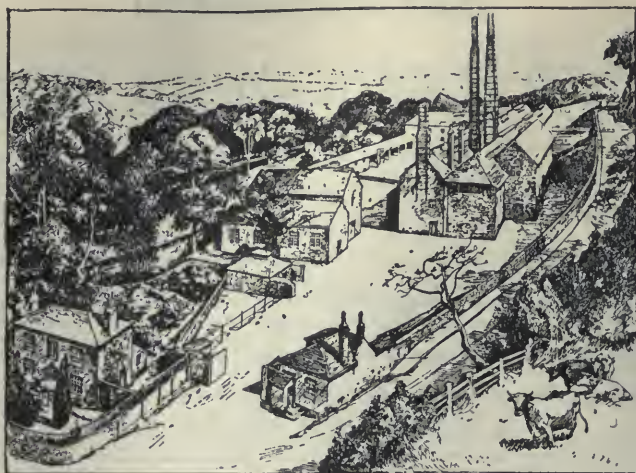
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The Canadian Medical Association Journal

VOL. IV.

NOVEMBER, 1914

No. 11

I—INTESTINAL STASIS

BY MAX EINHORN, M.D.

Professor of Medicine at the New York Postgraduate Medical School

THE term "intestinal stasis" originated with Sir Arbuthnot Lane. The chronic variety of intestinal stasis this eminent surgeon defines as follows: "Such an abnormal delay in the passage of the intestinal contents through a portion or portions of the gastrointestinal tract as results in the absorption into circulation of a greater quantity of toxic or poisonous materials than can be treated effectually by the organs whose function it is to convert them into products as innocuous as possible to the tissues of the body."

The main cause for chronic intestinal stasis Lane attributes to visceroptosis and the formation of kinks. Bainbridge, one of Lane's most ardent followers, says, "the natural outcome of this kinking of any portion of the drainage tube is obstruction to the lumen of the intestine at the point of the kink with 'puddling' in the dependent portions, damming back and infection of the contents, and general slowing of the drainage of the canal."

The symptoms are, briefly: headaches, nausea with vomiting, anorexia, loss of weight, cold extremities, mental apathy, constipation, bad taste in mouth, abdominal distention, muscular pains. The diagnosis is based on the discovery of existing visceroptosis or intestinal kinks (which are best demonstrated by the x-rays) in conjunction with a delay in the intestinal prochoresis. For the recognition of the latter, Paterson uses the charcoal test. He gives two teaspoonsfuls of charcoal and gauges the time of its appearance in the stool. If the charcoal does not appear within sixty

Six papers contributed to the discussion before the combined sections of the Canadian Medical Association, St. John, N.B., July 9th, 1914.

hours, there is intestinal stasis. The treatment consists, in mild cases, in an appropriate abdominal support and the administration of liquid paraffin, and in severe cases, in ileocolostomy (short-circuiting the bowel) or colectomy.

This, in short, is a brief résumé of Sir Arbuthnot Lane's teaching.

This subject is not a mere theoretical one but presents issues of great practical importance, dealing sometimes with situations endangering life. I feel, therefore, forced to lay my views, which are quite contrary to Sir Arbuthnot Lane's, before you for discussion. I would like to mention first that the idea of visceroptosis giving rise to intestinal angulations (designated as "kinks" by Lane) and the formation of partial stenoses with delayed prochoresis originated with F. Glénard. Whatever credit be due for this conception, it belongs to Glénard and not to Lane. The second point, that of intestinal stasis leading to the absorption of poisons within the intestine or auto-intoxication, is a theory which had been created long ago, principally by French clinicians, Bouchard, Combe, and others. This theory has been made by Lane and his disciples the foundation for their plan of treatment. The digestive canal is called a "drainage tube" and compared to a sewer system, in which any clogging must cause disaster.

For our own satisfaction let me say right here, that our organism is not so poor an engine as it is depicted by the adherents of the "stasis" theory. If our body is resourceful, as you all well know, in adequately fighting enemies that it has never before encountered,—how much more must we expect from it for everyday defenses. It is surely well fitted to debar the entrance of harmful digestive products through the intestinal wall, for this is a continuous happening.

Unless there is a real mechanical obstruction or some substantial organic lesion interfering with the intestinal current, a temporary delay or stasis of the contents may not mean much. At times this delayed prochoresis may serve to make absorption more complete, and is encountered in instances of insufficient nutrition.

Let me now say a word with regard to the auto-intoxication theory, as far as it concerns intestinal stasis or habitual constipation (for this is only another name for it). Constipation does not cause auto-intoxication. For, occasionally, a patient may have no bowel movement for several days and present no abnormal symptoms whatever. The symptoms frequently associated with chronic

constipation may be ascribed to nervous disturbances, and not to auto-intoxication. Reassurance and nerve sedatives will often do more good than drastic measures.

We now come to the last point, namely, that of treatment. In mild cases Lane, following Glénard, recommends an appropriate abdominal supporting bandage. To this we fully agree. In the severe type Lane recommends operative measures, namely, ileocolostomy or colectomy. With this radical plan of treatment most clinicians and some of the eminent surgeons do not agree.

If we did not need the colon, which is an organ of considerable length, we would not have it, or it would show decided signs of degeneration,—but this is not the case. Ileocolostomy or colectomy is justifiable in cases of cancer or stricture of the bowel, but not in functional disturbances. Albu has shown that while it is possible to exist without a colon, an individual deprived of this organ is subject to great dangers and easily succumbs to any intestinal disease, with which an ordinary individual can cope without difficulty.

Besides, there are the dangers of the operation and ultimately the uncertainty of a cure after exclusion or removal of the colon.

II—INTESTINAL STASIS

BY ALEXANDER MCPHEDRAN, M.D.

IT is generally conceded that intestinal stasis is of much importance, but, like all new theories, if supported with enthusiasm it is liable to carry us off our feet and lead to surgical means being resorted to in many cases in which they are not called for. This is shown in the history of ptosis of the abdominal organs in general, gastro-enterostomy, and, most strikingly of all, oöphorectomy, and, I venture to say, also in regard to diseases of the appendix. It is the duty of physicians to steady this tendency and restrict operation to those cases in which due relief cannot be obtained by well-directed treatment. The performance of this duty is only too often a thankless task, and never spectacular.

In the small intestine stasis occurs usually in the lower part of the ileum, less frequently in the duodenum; in the colon it may occur at any part. Stasis may be due to (1) lack of vigour of peristalsis and (2) organic abnormalities, whether (a) from abnormal

development, or (b) adhesions arising from previous inflammations. Anatomical abnormalities are not uncommon, yet the infrequency of stasis in early life goes to show that they are not frequent causes. Obstruction from displacement causing "kinking," and constriction from adhesions due to inflammation are much more common causes. Organic obstruction of slight degree is frequent, but is only effective in causing stasis after the bowel has lost its vigour of peristaltic power, the restoration of which will overcome the stasis and relieve the symptoms.

Loss of vigour in the action of the bowel may be due to retention of contents arising from want of regularity of evacuation; this may lead in time to loss of tone and consequent stasis.

General debility from illness, or debility from any cause increases the loss of tone and may of itself, especially with irregular habit, lead to stasis. In such cases the occurrence of stasis is often determined by the ptosis which so often results from weakness of the abdominal wall support and the loss of fat within the abdomen.

The symptoms arise from a variety of causes, the chief being absorption of toxic substances from the intestinal contents, chronic inflammation at the seat of obstruction, and reflex disturbances of other organs, chiefly the stomach. Any of these causes may be absent in any case; if all are present any one may be of most importance and overshadow the others. Reflex disturbances, especially of the stomach, are probably the most common and of them the chief complaint is made. Hyperacidity is frequent; not rarely the symptoms are so marked as to render it impossible to exclude gastric and duodenal ulcer, especially the later. It is in such cases that surgical means give the most striking results. In chronic inflammations, of the appendix most often, operation is also usually required. From absorption of toxic products the symptoms vary greatly, as they do in all cases of chronic intoxication. In some there is little disturbance beyond some irregularity of the bowel, usually constipation; in others there are chronic infections of various kinds which have been attributed to the stasis. How far this latter view is correct has still to be shown; that it is the active cause of symptoms in some cases there can be little doubt. The fact that so many cases show few if any symptoms goes to prove that there are necessary contributing causes other than the stasis.

In the diagnosis the chief reliance must be placed on the use of the Roentgen rays, but as usually practised the results are not satisfactory. The chief aid is obtained by the use of the fluoro-

scope. By its use the peristalsis and the movement of the contents of the bowel can be observed so frequently as to make the observation almost continuous. Plates taken from time to time are useful as records, and also to check the screen observations.

TREATMENT: In view of the fact that in all cases there is marked loss of tone of the bowel, treatment should aim at restoring the peristaltic power by the use of stimulating laxatives, by the giving of food containing much residue, such as green vegetables, and by massage of the abdomen. The bowel should be moved every day. Perseverance in this course under favourable circumstances will improve most cases and quite relieve many, even when there is some degree of impediment from kinking, from displacement, or even some degree of obstruction from adventitious bands and adhesions. Such treatment takes time and usually much care and supervision.

Two classes of cases will require surgical aid—(1) Those with organic obstruction which cannot be overcome by the above means, and (2) those who cannot secure the necessary care and supervision, or cannot take the necessary time to effect the needed relief. In most cases, however, the time required probably will not in the end be greater than that necessary for relief by surgical means.

III—INTESTINAL STASIS

BY A. PRIMROSE, M.B., C.M. (EDIN.), M.R.C.S. (ENG.)

*Associate Professor of Clinical Surgery, University of Toronto,
Surgeon to the Toronto General Hospital*

AT the present time a great deal of attention is being devoted to the question of the relief of intestinal stasis by surgical means. The problems involved in the study of the effects produced by delay in the passage of intestinal contents and of absorption therefrom are complex and difficult. We are greatly indebted to Sir Arbuthnot Lane for his work in this field. He has stimulated much research and has inspired the profession in general with determined effort to relieve manifold troubles which he has shown may be due to stasis in the intestine and which may be ameliorated or cured

by operation. His accomplishment in this regard will remain an enduring monument to his genius and skill.

Since Sir Arbuthnot Lane began to publish his views, many other surgeons have carried out the treatment which he has advocated and there is now abundant evidence to prove that such operations as ileo-sigmoidostomy or resection of the large bowel may be followed by remarkable results in effecting the cure of disease. We must admit at the outset we cannot follow Lane in the extreme views he holds when he describes intestinal stasis as the sole factor in the etiology of many diseases. Nor are we convinced that he is right in his conclusions regarding either the manner in which stasis is the cause of disease or the method by which cure is effected when such an operation as colectomy is performed. These are questions which are receiving much attention both from the laboratory and the clinical standpoint and in course of time from both these sources we shall have the solution of many vexed problems. The impartial critic must admit that the hypotheses at present advanced, to explain cause and effect, varied and contradictory as they sometimes are, cannot be accepted as true and final until more convincing proof is forthcoming.

We surgeons are sometimes twitted with the insinuation that unnecessary operations are occasionally undertaken and carried out. On the other hand, in the past, one has had much more regret over, let us say, appendices which we had not taken out or which we had not had the opportunity of removing, than for any we had sacrificed. The tragedies in the experience of the surgeon are rather in those instances where operation had not been undertaken or where it had been postponed too long. Let me point out, too, that far more harm has been done by the careless employment of drugs, both by the physician and surgeon, than by the occasional removal of an appendix which might have been saved. The victims of such drugs as morphine, cocaine, alcohol, etc., are unfortunately numerous, whilst I am not aware that the removal of the appendix is fraught with any such disastrous results. The operations advocated by Lane are not to be undertaken lightly, they are serious and far reaching in their effects, but let us sift the evidence in the individual case and let us be careful not to withhold methods of treatment which may be necessary for the restoration of health, even if this should involve a serious operation. We must estimate the risk involved and the prospect of relief by operation in each case and give our advice accordingly.

One of the most convincing and far reaching criticisms of

Sir Arbuthnot Lane's work has been given us by Professor Adami. I think we shall all admit that his paper, published in the *British Medical Journal* last January, is an impartial review of the situation and is most logical in its conclusions. Professor Adami first summarises the "seventeen symptoms and nine diseases indirectly induced" which Lane has attributed to intestinal stasis. In the beginning of the paper Adami appears incredulous regarding Lane's conclusions, but as he enlarges on his subject he proceeds to prove from laboratory findings and clinical results that every one of Lane's symptoms and diseases may originate from intestinal stasis. In his summary we find the following statement: "While the symptoms and diseases enumerated by Sir Arbuthnot Lane may follow intestinal stasis, at least a large proportion of them may originate independently of such stasis." We find, therefore, that Professor Adami proves to one's satisfaction by logical argument that all these maladies may result from intestinal stasis although he does not agree with Sir Arbuthnot Lane as to the way in which this is brought about. On the other hand one must admit that the conclusion arrived at by Adami, as to the frequency in which this factor is the active one in the production of these diseases, is entirely at variance with Lane's views. Lane states his creed in no uncertain terms; for example, in one of his papers we find the following statement: "I believe that no one can become affected by tuberculous disease or by rheumatoid arthritis unless the resisting power of the individual to the entry of organisms has been depreciated by auto-intoxication consequent on the presence of chronic intestinal stasis." Whilst, therefore, Lane insists that stasis is the only cause of many diseases, Adami on the contrary considers it only one of the possible causes. One can readily believe that the resistance of the individual may be so lowered by the toxic effect of stasis that he falls a victim to, let us say, tuberculosis. Again it may follow that if stasis be relieved and the nutrition and general resistance of the individual be increased thereby, we may effect a cure of the specific tuberculosis trouble. Where we cannot follow Lane is in his assumption that stasis is the sole cause and that its relief is the essential part of the cure in all cases.

Sir Arbuthnot Lane's work has stimulated much investigation and much discussion. Throughout the surgical world many men have operated by Lane's method for the relief of stasis which has been proved to be present and where it appeared to be the cause of specific symptoms and disease. Many cases have been sub-

mitted to operation and with varying results. That phase of the subject has been reached when the individual practitioner (physician or surgeon) is putting on record his own clinical experience, whilst from the laboratory and the autopsy room we have data forthcoming which will shed light on the vexed problems involved. I fancy my part in the present programme is fulfilled when I narrate my experience and my observations in cases of this type coming under my care, in whom I have carried out various surgical procedures for their relief.

There are two main causes of stasis. The one is due to an organic lesion, the other is functional. In other words a mechanical obstruction may be present or, on the other hand, there may be delay in the passage of bowel contents solely because of enfeebled activity of the peristaltic movement or spasm of muscle causing obstruction by constriction of the bowel. These two varieties of stasis have been called the mechanical and the "simple static variety."

The most common mechanical cause of stasis is found in bands or adhesions which constrict or kink the intestine and thus render difficult the passage of contents along the lumen of the gut or, at times, may cause complete obstruction. These bands and adhesions may be found at any portion of the intestinal tract but are most common near the lower end of the ileum, where the so-called "Lane's kink" is frequently present. More or less acute kinking may be found at the duodeno-jejunal juncture. In connexion with the large intestine bands of more or less membranous structures may be formed. The ascending colon may be constricted by such agencies or, again, an acute kink may be found at the hepatic or the splenic flexure of the colon. The lower end of the sigmoid flexure may also be similarly affected.

The most common seat of trouble is in the ileo-cæcal region, and here a considerable variety of conditions deserve attention. First we have the ileo-cæcal valve which in the vast majority of cases is efficient and prevents the regurgitation of cæcal contents back into the ileum. Occasionally but, I believe, rarely this valve is not efficient, and under such circumstances material may be forced back into the ileum when the large bowel is actively contracting. The contraction of the circular band of muscle fibre in the terminal portion of the ileum, forming the so-called "ileo-cæcal sphincter" is another factor to be considered. Then we have the so-called Lane's kink of the ileum. This is produced by a firm band of fibrous tissue developed in the under aspect of the

mesentery, usually about two inches from the ileo-colic juncture. This band is resistant, inelastic and non-vascular, and fixes the ileum in such fashion as to cause it to become acutely kinked and at the same time rotated upon its longitudinal axis. The structure described as "the vascular membrane of Jackson" is also responsible for trouble in this locality. We need not now discuss its etiology, but we recognize that it may be the cause of serious trouble. Very often it exists as a thin vascular veil spreading over the cæcum and ascending colon. At times throughout this veil one finds at intervals strands of more or less dense fibrous tissue forming a series of strings or cords attached to the bowel. Or again it may be represented by a thick membranous structure binding down the colon and possible causing obstruction of the bowel by constriction. Lastly we have the vermiform appendix, which is frequently the seat of acute or chronic change and may contract firm and extensive adhesions to different structures in its neighbourhood.

LANE'S KINK OF THE ILEUM AND JACKSON'S MEMBRANE—FREQUENCY OF THEIR OCCURRENCE AS OBSERVED IN 155 CONSECUTIVE OPERATIONS FOR THE REMOVAL OF THE VERMIFORM APPENDIX, PERFORMED DURING 16 MONTHS ENDING JUNE 30TH, 1914.

	Males	Females	Acute	Chronic
155 cases distributed as follows.	52	103	71	84
Lane's kink of the ileum.	9	13	7	15
Jackson's pericolic membrane	7	27	6	28

Lane's Kink of the Ileum

22 out of 155 patients operated upon possessed a Lane's kink, i.e., 14 per cent.

9 out of 52 males, i.e., 17·3 per cent. of the males exhibited a Lane's kink of the ileum.

13 out of 103 females, i.e., 12·7 per cent. of the females exhibited a Lane's kink of the ileum.

Average age of the males was 33·3 years, the youngest 14, the oldest 45 years.

Average age of the females was 32·5 years, the youngest 16, the oldest 46 years.

7 cases were acute, 15 chronic, i.e., 31·8 per cent. of the 22 cases were acute, 68·2 per cent. chronic.

Jackson's Pericolic Membrane

34 out of 155 patients operated upon possessed a Jackson's pericolic membrane, i.e., 22 per cent.

7 out of 52 males, i.e., 13·5 per cent. of the males exhibited a Jackson's pericolic membrane.

27 out of 103 females, i.e., 26·2 per cent. of the females exhibited a Jackson's pericolic membrane.

Average age of the males was 30·5 years, the youngest 8, the oldest 50 years.

Average age of the females was 31.5 years, the youngest 14, the oldest 66 years. 6 cases were acute, 28 chronic, i.e., 17.7 per cent. of the 34 cases were acute, 82.3 per cent. chronic.

Adhesions about the Appendix

In 98 out of 155 cases adhesions, more or less dense, existed about the appendix, i.e., 63.2 per cent.

Adventitious bands and adhesions may cause constriction or kinking of the bowel in any part of its length; the different flexures of the colon are prone to be thus affected. In addition to this there are a great many other possible causes of mechanical obstruction producing chronic stasis, such as new growth, chronic inflammatory thickenings in the wall of the bowel, specific infections, e.g., tuberculosis, etc.

When a patient presents himself with symptoms of intestinal stasis we search about for its cause which, if it be a mechanical one, is often not hard to find. The ileo-cæcal region is by far the most common seat of trouble. The history of the patient's symptoms, the physical examination, and the x-ray findings with the bismuth or barium meal or enema must all be considered in establishing a diagnosis. It is essential also that we should have routine examinations made of the blood, of the stomach contents and of the fæces, if we are to form an intelligent conception of the conditions present and of the effect of treatment.

When we attempt operative interference for the relief of stasis we are frequently at a loss to determine how much or how little should be undertaken. We find, for example, that in some patients the removal of an appendix which is the seat of chronic thickening with adhesions is all that is necessary. I might cite in illustration the case of a woman, forty-eight years of age, who had for long suffered from chronic ill health, lack of energy, and other symptoms we associate with toxæmia induced by intestinal stasis. She had some abdominal distress and obstinate constipation. At operation we found an appendix the seat of chronic change, and in addition a very marked Jackson's membrane spread over the cæcum. We merely removed the appendix and did nothing more. The patient enjoyed better health after the operation than she has done for years. On the other hand the very reverse of this case may be mentioned in which very extensive operative procedures had to be undertaken before relief was obtained. A girl, sixteen years of age, gave us a history that for eight years she had suffered from obstinate constipation, occasional nausea and vomiting with, at times, a considerable amount of pain. X-ray findings with bismuth meals showed

marked ileo-stasis, while bismuth enemata passed rapidly and without obstruction to the ileo-cæcal valve. We removed a chronic appendix and relieved a very marked kink in the ileum by dividing dense fibrous tissue which held it down. She was completely relieved of her symptoms but they gradually recurred and six weeks subsequently we had to operate again. One found that the kink had been reproduced and the fibrous band was as dense and unyielding as ever. The ileum was now cut across and an end-to-side anastomosis made with the sigmoid. Her symptoms were again relieved but she now began to suffer from the backing up of material from the point of anastomosis into the colon. After an interval of seven weeks, I again opened the abdomen and removed the greater part of the large bowel. She is now, I trust, permanently rid of her trouble. Her distressing symptoms have all disappeared and she has returned to her work suffering no discomfort. It is now seven months since the last operation. With more experience we may learn better when one should proceed at once to the major operation of colectomy. I must confess that in my experience the indications for complete ablation of the large bowel are not always clear, even when the abdomen is opened. In some cases where there is extensive trouble present a simple operation will effect a cure, whilst again, in the presence of apparently trivial conditions, we may have to proceed to the major operation of colectomy before we can obtain relief for our patients.

Occasionally symptoms attributable to stasis appear after an operation for removal of the appendix. Thus in one of my cases, a woman aged thirty, the appendix had been removed for acute infection with general peritonitis. She recovered, but for a year subsequently suffered all the typical symptoms which Lane has attributed to stasis. She had the poor circulation, the clammy hands, the lack of energy and the mental depression which are recognized as typical. The *x*-ray findings showed marked stasis in the cæcum and sigmoid. One found on opening the abdomen that coils of practically the entire small intestine were glued together by adhesions. These were soft and easily broken down but were nonvascular or nearly so. These adhesions were separated extensively; the small intestine from one end to the other was freed by manipulation with the occasional division and ligature of a stronger band of adhesion. I then short-circuited, placing the divided ileum, end to side, into the sigmoid. Paraffin was poured into the peritoneal cavity among the coils of small bowel and the abdomen was closed. She at once improved, the operation was

done nine months ago and a more grateful patient does not exist, as she is now enjoying complete health and has lost all her former trouble.

The persistence of symptoms after the removal of a diseased appendix is, I am confident, often due to the fact that a Lane's kink existed in addition to the appendix trouble and had been overlooked at the operation. We have had several instances where this has been observed. Thus in one woman, aged thirty-six, the appendix had been removed two years before, and subsequent to that operation she had persistent constipation and difficulty in getting the bowels to move until, when I saw her, complete obstruction made operation imperative. One found a Lane's kink causing acute angulation and obstruction of the ileum. After freeing this kink she got complete relief. One should make it a routine practice to look for a kink of the ileum whenever one is operating for appendicitis, either acute or chronic. One is surprised how often it is present and it is usually very easily dealt with.

The effect of intestinal stasis may be far reaching, and it is remarkable how distant organs may become involved in serious lesions as the result of trouble localized in the ileo-cæcal region. Thus when a kink is present in the ileum near the cæcum, or where in the absence of such a kink we simply have a diseased and adherent appendix, we frequently have associated gastric trouble, gall-bladder trouble, or trouble in the duodenum. Of late a considerable amount of attention has been paid to this fact in order to discover the explanation of the relationship. It is not our intention to enquire into the different theories which have been advanced, but we wish to record our experience as to the clinical demonstration of these facts. Not only does it appear that trouble in the region of the appendix may produce gastric or duodenal ulcer, cholecystitis, etc., but we are beginning to recognize that the relief of trouble in the appendix and lower ileum will often react beneficially, and may even produce a cure of the secondary trouble in stomach, duodenum or gall-bladder. A man came to me a short time ago with a typical history of duodenal ulcer. The character and time of the pain and other symptoms pointed to this. I operated for duodenal ulcer but was unable to satisfy myself that there was one. I found, however, an adherent chronic appendix and a very marked kink of the ileum. After relief of the trouble in the ileo-cæcal region he recovered and lost all his symptoms of duodenal ulcer. Quite recently I was asked by one of my col-

leagues to operate for what he had diagnosed as an early case of carcinoma of the stomach. The man was forty-five years of age, had lost twenty-two pounds in weight, had epigastric distress with frequent vomiting and pain. The gastric analysis showed almost a complete absence of hydrochloric acid, and the Oppler-Boas bacillus was present. On opening the abdomen I could find no evidence of gastric carcinoma, but I did find extensive trouble in the ileo-cæcal region. The appendix was extensively adherent and the seat of chronic thickening, and an acute kink existed in the ileum near by. These conditions in the ileo-cæcal region were relieved. Subsequently his gastric trouble entirely cleared up and apparently he now enjoys complete restoration of health.

Occasionally one finds conditions co-existing which demand a double operation such as gall-stones along with a diseased appendix. Here one should unquestionably, in my opinion, remove the gall-stones and take out the appendix. I have not the courage of conviction to do as I saw Sir Arbuthnot Lane do on one occasion at Guy's Hospital. He found some gall-stones present, but these he left and performed the operation of short-circuiting; closing the abdomen he stated that the gall-stones would now look after themselves.

The conclusions which I have arrived at as the result of my experience in the surgical treatment of intestinal stasis thus far may be summarized as follows:

1. Intestinal stasis may produce serious impairment of health. The manifestations of disease dependent upon this cause may present great variety.

2. There may be multiple lesions demanding our attention—the primary trouble is often in the ileo-cæcal region and secondary trouble may develop in the stomach, duodenum, etc. That secondary trouble may be an anatomical lesion, e. g., an ulcer, or it may be purely a functional disturbance without any gross lesion.

3. Where ill health, caused by intestinal stasis, resists ordinary medical treatment, then surgical intervention of suitable character should be undertaken.

IV—INTESTINAL STASIS

BY J. M. ELDER, M.D.

AT the outset it would seem that we should clearly understand what the term "intestinal stasis" means. Is there such a thing as "auto-intoxication" (Lane) or "sub-infection" (Adami) dependent upon undue stasis of the contents of the intestinal tract, and if there is, how far can surgical efforts overcome such a condition? I fear that the present attitude of surgeons, as a rule, is to regard the problem purely as one in mechanics. They seem to argue that the proper method of preventing "stasis" in any part of the digestive tract is to "short-circuit" that part, and thus send the freight onward by a more direct route, quite overlooking the *physiological* derangements which must follow upon such procedure.

Dr. Geddes has just demonstrated to us, in a most delightful manner, the development and anatomy of the colon. The Mayos, in a recent paper, have touched upon the same subject, and have evidently come to the same conclusions as Dr. Geddes has regarding colonic function. From the surgical standpoint these views may be briefly summarized thus: From the cæcum to the splenic flexure, the colon is an important part of the digestive mechanism, and from that part of the bowel, much absorption takes place. The splenic flexure, in man, is represented in some lower animals by a valve, and there is present, at times, a *reversed* peristalsis from that flexure back to the cæcum, in order that this absorption may be aided. Beyond the splenic flexure, but only *beyond*, the colon may fairly be considered as a fæcal reservoir—the "cess-pit" (Lane) for the body.

If we accept these views of the anatomy and physiology of the large bowel, how does it all bear upon the surgical problems? It is quite evident there are different forms of stasis, requiring different methods of treatment to correct, so that it is quite impossible that any one method can meet all cases.

I propose to cite briefly my own experience of these forms and simply to enumerate the cases I have met with which illustrate the treatment.

1. To overcome acute angulation of the splenic flexure of the colon, causing stasis in the proximal part of the colon and also delay in the ileal effluent from back-pressure upon the ileo-cæcal valve:

here a lateral anastomosis between the transverse colon and the upper part of the sigmoid loop is indicated, and is an operation of no difficulty. I have had five such cases, and all have been immediately and permanently benefitted.

2. To overcome stasis in the ileum due to extensive adhesions of the ileum to other parts, especially in the pelvis: in three cases I did an anastomosis between a free loop of the ileum and the transverse colon. One case, which was tubercular, died three months after operation. The other two were improved, but still complained of abdominal pains and distress.

3. In three cases ileo-sigmoidostomy (Lane) was done. Upon one of these cases—a case of tubercular peritonitis—Sir Arbuthnot Lane himself was good enough to operate at my clinic. So far as immediate results went, the recovery from operation left nothing to be desired; but the reports from the patient since his return home show that he is no better than many of these cases of tubercular peritonitis are after a simple laparotomy. In two other cases, I have carried out Lane's excellent technique, and implanted the ileum into the sigmoid. In both these cases the indication was to relieve a condition of severe ulcerative (even hæmorrhagic) colitis. Both have been benefitted, though in neither did we remove the diseased bowel. This, I think, will still require to be done before a cure should be looked for. I am firmly of opinion that if ileo-sigmoidostomy (Lane) is indicated, resection of the short-circuited part of the colon is also indicated, either then, or later, as the condition of the patient may permit.

4. Ileac stasis due to constriction of the ileum by a diseased appendix, which acted like a band. I have operated upon five of these cases, and they have all done well. These cases present a marked contrast, so far as my experience goes, to those cases in which the obstruction to the ileal effluent (to quote Lane) was due to "Jackson's membrane" or "Lane's kink." I have never seen any of these cases permanently improved by any operation which merely aimed at separating or removing these adhesions. My opinion is that they reform, and that the "last state of that man is worse than the first." Here, I think, Lane is justified in his radical views of treatment.

Just a word about the use of liquid paraffin in these cases, either before or after operation. I have never seen any case permanently benefitted by its use alone; but I am quite convinced that it is a very valuable post-operative agent, in the prevention of adhesions. Since its use, as a post-operative routine, I certainly have had fewer cases of acute obstruction.

As regards the use of the Curtis belt, which Lane advocates for all post-operative cases, I have not been able to get any of my patients to wear one. I can personally testify that the belt is comfortable and easily worn, and in any case of general splanchnoptosis should be very valuable, and possibly, as Lane believes, its use would prevent the necessity of many of these short-circuiting operations.

V—INTESTINAL STASIS

By F. N. G. STARR, M.B.

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“ONE of the oldest Egyptian treatises on medicine in existence, dating from the fourteenth century B.C., gives directions for the preparation of enemata, and they were in common use among the Egyptians: Herodotus, in 443 B.C., wrote of the Egyptians: ‘They clear themselves on three consecutive days in each month, seeking after health by emetics and enemata, for they think that all disease comes to man from his food.’ Perhaps they learned some of this from a bird called the ibis. Of this bird, Pliny, A.D. 77, says, ‘He washes the inside of his body by introducing water with his beak into the channel by which our health demands that the residue of our food should leave.’”¹

These ancient Egyptians used strong drugs and enemata, believing the human intestine to be the source of most of their woes. In the middle ages attacks were made upon the guilt of the intestines as a source of most of the human ills. It was advised that places for defecation should be warm and comfortable. Following the irritation caused by scammony in the seventeenth and the eighteenth century,—then coming into the nineteenth with Abernethy² and his “eternal blue pill,” supplemented by black draught, with the everlastingly irritated anus, a revulsion of feeling occurred against the vicissitudes of the emptied colon. It was then that the human race began to develop nervous prostration and neurasthenia, with an increase in the amount of cancer and tuberculosis, and of all sorts of gastric disturbance—to say nothing of appendicitis.

Of late years, thanks to Metchnikoff and to Sir Arbuthnot

Lane, the profession is beginning again to realize what the Egyptians knew more than 3,000 years ago. In time the public will be re-educated, as a recent French cure professes to *re-educate* the intestine. Then again a happier day will dawn, when, with the regularly evacuated bowel, the human race will be saved many of its present ills, and more people will retain what otherwise is fast becoming not only a useless, but a dangerous, colon.

At the Hamilton Medical Society³ on May 3rd, 1911, I read a paper on duodenal ulcer, in which I propounded the theory that kinks in various parts of the intestinal canal might well be causes of intestinal stasis, and this a cause of duodenal ulcer. Lane⁴ has propounded the same theory. This theory was based upon the observation of a number of cases of duodenal ulcer operated upon, in which I found kinks in the intestinal canal. On several occasions a gastro-enterostomy failed to relieve completely the condition, and a loosening of the kinks or an entero-enterostomy or a short-circuiting was called for before complete relief was obtained. Naturally this made me sit up and take notice. Is duodenal ulcer a primary or a secondary condition? I am inclined to the belief that commonly it is secondary to a stasis causing infection in an already overloaded and overworked duodenum.

On December 20th, 1912, I opened a patient for Dr. James Moore, of Brooklin, Ontario, in whom we had diagnosed a duodenal ulcer with pyloric obstruction. We found the ulcer, overcast it, and did a posterior gastro-enterostomy, after loosening the first piece of the jejunum from the transverse mesocolon. This, instead of dropping normally into the left flank, was half as large as the stomach and was adherent to the transverse mesocolon and turned to the right, causing great distention of the duodenum as well. We also removed the appendix.

After a somewhat hazardous convalescence he was well for a few weeks and then began vomiting. Drs. McKay and Moore again opened him on March 10th, 1913, and finding the first piece of the jejunum re-attached to the transverse mesocolon, they again detached it. He was well then for most of the summer, but in the early autumn he began to have attacks of vomiting, associated with chills, headache, dizziness, and one night he lost consciousness and bit his tongue. He vomited great quantities of bile about every second day, although he rarely vomited food. In December, 1913, I again opened him, and did an entero-enterostomy, between the first piece of the jejunum and the coil lower down. Since then, after a prolonged convalescence, he has been perfectly well and is able to follow his usual occupation.

After a careful examination of a medical man,—Dr. F., aged thirty-nine—referred by Dr. Smith, of Stratford, I came to the conclusion that he was suffering from stasis. Dr. McPhedran had examined him and had diagnosed duodenal ulcer. Of this condition he had all the classical earmarks. On February 18th, 1914, I opened his abdomen, and he had a duodenal ulcer: in addition, he had evidence of an old attack of appendicitis, the tip being amputated and its lumen obliterated. There was a firm, fibrous Lane's kink⁵ of the ileum, and also adhesive bands binding the first piece of the transverse colon to the ascending. I divided all these kinks and bands and removed the appendix. I did no gastro-enterostomy, nor did I oversee the duodenal ulcer. He not only recovered from the operation but had no sign of indigestion or gastric disturbance of any kind for over three months, when a change in his usual mode of life caused some slight inconvenience for a time. He has gained in weight ten pounds. There is no doubt in my own mind that his ulcer is healed, notwithstanding the fact that he has suffered from gastric symptoms for over twenty years.

On April 24th, 1914, I saw a patient, Mr. B., aged twenty-two, who had a general peritonitis from a perforated duodenal ulcer. He was removed to the General Hospital as soon as possible. On opening the abdomen and mopping out the fluid contents, the perforation was easily found, sutured, and a piece of omental fat covered over the suture line. When putting a drain in the pelvis, I thought I had better have a look at the ileo-cæcal region, and I found a dense Lane's kink of the ileum, which had so contracted the ileum as to almost obliterate the lumen. This I loosened, at the risk of exposing a raw surface to the possibility of infection. He has recovered. The duodenum healed without further leak. Was the stasis the cause of his duodenal ulcer? There was a history of frequent attacks, sometimes diagnosed as appendicitis and sometimes as gall-stones.

On November 9th, 1911, I operated upon Mrs. A., aged thirty-one, referred by Dr. McPhedran for duodenal ulcer, and, finding it, I did a gastro-enterostomy. She recovered from the operation, but though her digestion was better, there was still great difficulty in getting the bowels to move, and she suffered severe pain in the left iliac region. In July, 1913, she returned from Montreal and I began to think of a second operation. She feared the consequences and returned home. In the autumn life became unbearable and about the first of the year she returned.

Dr. McPhedran and I fluoroscoped the stomach and found most active peristalsis with the gastro-enterostomy opening in good working order. A series of plates showed stasis, and the "foot-like" shadow in the cæcum. With the fluoroscope we could get the bismuth shadow in the cæcum at the end of nine days. On February 9th, 1914, I opened the abdomen and removed the cæcum, the ascending and part of the transverse colon, anastomosing the ileum into the stump of the transverse colon. From a state of having from two to three bowel evacuations a month, she began, after the operation, with four a day, then settled down to one or two copious evacuations without purgative or laxative of any kind. When able to be up for the first time she had gained three pounds. At the last report she was still doing well, was feeling well, and was gradually overcoming the neurasthenia for which she had been treated before she came under our observation.

The question now in my mind is, was the gastro-enterostomy necessary? Would the colectomy with short-circuiting have accomplished what we now have? Does it not strike you, as it struck me, that the kinks in the lower bowel may have been a causative factor in the production of these ulcers?

To illustrate another type of case I may mention Mr. D., aged thirty-eight, referred by Dr. Cooper Cole, and presenting symptoms of pain, nausea, and inability to get a bowel evacuation. Associated with each attack he passed urine resembling milk in appearance. This was not chyle. The laboratory reports were unsatisfactory. Finally he was compelled to knock off work. A bismuth meal showed a shadow in the ileum, appendix, and cæcum fifteen hours after. On January 9th, 1914, I opened him, removed an appendix containing several concretions, and divided a peritoneal band fixing the first part of the transverse colon to the ascending colon, thus producing an acute kink, with a collapsed transverse colon beyond. His symptoms disappeared, the bowels move regularly and he has a greatly increased capacity for work. I mention this case as a type of twenty-eight cases operated upon in the first five months of this year, that is, patients whose condition is usually diagnosed as "chronic appendicitis," but which really are cases of mild stasis. If the appendix only is removed, the so-called symptoms of "chronic appendicitis" recur as soon as the patient begins to follow his usual occupation. It is then that the surgeon finds himself at a loss to explain why the patient is not better. One cannot blame the physician for not believing more in the existence of such a condition, but what beats me is the surgeon

who daily sees such conditions—without observing them—and therefore still disbelieves!

Another type, represented by Mr. C., aged seventy-one, referred by Dr. W. A. Young, had almost constant burning pain in the epigastrium, going through to the back, with nausea and vomiting. There was difficulty with the bowels, he was unable to sleep and had lost thirty pounds. Upon examination I found a mass about the size of an open hand just midway between the umbilicus and the ensiform cartilage. The mass was uniformly smooth and I took it to be an enlarged pancreas. Thinking it might be the result of an infection from stasis, I had the barium meal given and a series of plates made. There was marked stasis at the end of twenty-four hours, at the ileo-cæcal region. On May 29th, 1914, I opened the abdomen and found an enlarged but uniformly hard pancreas. I divided a dense kink of the ileum. The transverse colon was parallel with and adherent to the ascending colon and the cæcum. These bands were easily divided and a retrocæcal appendix removed. He has done well, has had regular bowel evacuations, sleeps without hypnotics and the mass has disappeared from the epigastrium. My reason for mentioning this case is that it represents a type of case that is commonly diagnosed as "malignant disease," based on the following indications; the age of the patient, the gradual onset, the lump, nausea and vomiting, and the loss of flesh—a type of case that is condemned to a slow death with an associated morphine habit.

The question has often arisen in my mind—May stasis be a cause of some of our chronic joint conditions? Miss C., aged thirty-two, referred by Dr. C. S. Wright, has been a sufferer from rheumatoid arthritis for about eight years. Some joints are already ankylosed and most of the joints are painful. When Dr. Wright first saw her, he had the nose, throat and mouth carefully attended to, as a possible source of infection, without benefit. A water diet always gave relief. An x-ray examination revealed a marked ileal stasis at the end of forty-eight hours. On March 25th, I opened the abdomen and removed the cæcum, ascending colon, and the transverse colon as far as the middle colic artery, putting the stump of the ileum into the transverse colon. For the first ten days there was little or no joint pain, which was unusual, but as she began to move about there was some return. While the stasis is cured I do not expect that this patient's joints will loosen up, but I do look for a cessation of the progress of the disease as well as a great relief from pain, and I hope to be able to report in a year's

time that she is greatly improved. I know of nothing else that is of any benefit, and if, after a careful elimination of other possible causes, a stasis is present, I see no reason why it should not be relieved, until we discover whether it will bring about a mitigation of the symptoms, or possibly stay the progress of this dreadful affection.

The next is a series of cases in which the patients had become chronic invalids, looked upon as neurasthenics, getting little or no sympathy, and no relief from any treatment. Miss F., aged twenty-eight, referred by Dr. R. J. McMillan, gave a history of constipation for between fifteen and twenty years; headache for thirteen years, pain in back for fifteen or twenty years, pain in left side for three years, frequency of micturition, with difficulty in retaining urine, all her life, pain in the right side for six weeks, no appetite, dry skin, sallow complexion, weight one hundred and twelve pounds. She was tender over the lower abdomen, more markedly over the cæcum, with comparative rectus rigidity. On December 19th, 1913, I removed the cæcum, ascending colon, and the transverse as far as the middle colic artery, and anastomosed the ileum into the stump of the transverse colon. For some time there was difficulty in getting the bowels to move regularly. Apparently this was caused by an unusual amount of thickening at the point of anastomosis. Later this was overcome and she left the hospital on January 22nd with regular daily evacuations, requiring no medicine to bring this about. She was improving steadily and gaining weight. As she returned to her home in the United States a couple of months ago, I have lost track of her.

Mrs. L., aged forty-nine, never robust, for ten years had disturbance in the stomach, frequent attacks of vomiting, "churning" in the stomach at night, and belching of gas relieved for a time by a drink of hot water, headache, no appetite. At this time a cystic left ovary was removed as a possible source of reflex trouble, and for several years she was greatly improved, though at intervals she was bothered by symptoms referred to the stomach. A year ago the symptoms recurred in an aggravated form, associated with constipation, and nothing gave relief. All sorts of purgatives were tried but each soon lost its effect. The nausea and vomiting were prominent symptoms: pain in the epigastrium became severe after taking food, and there was almost constant pain under the left shoulder blade; there was also daily headache. She complained of a tired feeling within the abdomen. With a six weeks' rest in bed there was some improvement, though she lost flesh

steadily. Frequent examinations showed a ballooning of the bowel in the ileo-cæcal region. An x-ray examination showed a shadow in the cæcum and splashes throughout a prolapsed colon at the end of five days. On March 24th, 1914, I resected the ileum and removed the cæcum, ascending and most of the transverse colon, anastomosing the ileum to the stump of the transverse colon. Her progress was uneventful. She has had no gastric symptoms since, she eats anything, although she had not eaten fruit for years, sleeps well, has gained thirteen and three-quarter pounds, and has one or two bowel evacuations daily without medicine.

Mr. L., aged twenty-eight, referred by Dr. A. R. Gordon, has been an invalid for two years. During that time he has sought help from various physicians and varying climates. For the past two years he has worn a spinal brace for Pott's disease, of the presence of which neither Dr. Gordon nor I could find any evidence. He had constant abdominal distress with constipation. He has pulmonary tuberculosis, however, as well as a positive Wassermann. Upon investigation one could make out a ballooned cæcum and the x-rays revealed a marked stasis. On May 27th, 1914, I removed the cæcum, ascending colon and part of the transverse, anastomosing the ileum to the stump of the transverse colon. He has had a trying convalescence but recently has begun to improve. Judging from several cases recently reported of pulmonary tuberculosis which had developed tuberculosis of the large bowel, in which I had either short-circuited or done a resection with short-circuiting, and which recovered not only from the bowel condition but from the pulmonary condition as well, I should think his chances of permanent cure are excellent.

Mr. M., aged twenty-nine, has suffered from stomach and bowel trouble for sixteen years. When he gets a bad attack he becomes extremely nervous, and breaks out in a sweat on the right half of the body. He "acts like a crazy man" when his attacks of distress are at their worst. Walking sometimes relieves, but he gets most relief from large quantities of whiskey. His appetite is ravenous, but he has immediate distress which continues, with soreness in the epigastrium. He has eructations of sour fluid, very little nausea, but vomits almost daily. He succeeds with purgatives in getting a daily bowel evacuation, but never feels that the bowel empties itself. He has been treated by physicians without number for a dilated stomach. The x-ray findings reveal stasis. On June 22nd, 1914, I opened the abdomen, and found an enormously dilated cæcum, ascending colon and part of

the transverse. At the hepatic flexure a marked angulation, and at about the middle of the transverse a cord-like band, springing from the under surface of the omentum completely surrounded the bowel. Feeling that a mere division of the kink in the hepatic flexure and a division of the band might not give the colon a chance to regain its tone, I resected and anastomosed the ileum to the transverse colon. He is progressing favorably and is gradually regaining a placid stomach, which by the way was not dilated, and the bowels are moving regularly with very little assistance.

Most of these cases are too recent to say much as to permanent results, but judging from results formerly reported I am very sanguine as to the future.

The question may properly be asked—Why remove only part of the colon? In answer to this I would say that if there is no obstruction in the splenic flexure or sigmoid, I consider it an advantage to join midgut to midgut rather than, as in ileo-sigmoidostomy, to join midgut to hindgut, and secondly, if one does not go beyond the middle colic artery one is sure of the colon's blood supply, and also sure of a good omentum.

My belief has been that these kinks and bands are congenital.⁶ This theory seems to be confirmed by a recent report by Dr. Loughheed, assistant pathologist at the General Hospital. A baby two days old died of melæna, and at the autopsy the following note was made: "Small intestine black in colour, distended, and contains tar-like material. One inch from the ileo-cæcal valve, binding down the small intestine in a V-shaped manner, occurs a definite, white fibrous band which runs over the brim of the pelvis towards the rectum. Cæcum slightly distended with gas and tar-like material. No evidence of obstruction, volvulus or intussusception."

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VI—ILEAL STASIS

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WE are indebted to Sir Arbuthnot Lane and Dr. Jordan for the interest which has been elicited in this country and abroad in the question of intestinal stasis. It cannot be denied that such a condition exists and is the cause of a certain group of symptoms; and it is also true that in many instances practitioners and surgeons have failed to recognize it as such. The extreme theories of Mr. Lane and some of his disciples have served their purpose in exciting the antagonism of conservative observers, and have resulted indirectly in the discussion of this subject at the present meeting.

While I may have a very definite opinion as to whether or not intestinal stasis is a cause or *the* cause of a large group of ills to which humanity is subject, such as cancer, tuberculosis, nephritis, senility, insanity, lack of sexual desire, etc., my discussion must be limited to a consideration of the subject from the roentgenologic standpoint. The whole subject of intestinal stasis centres around the roentgenologic findings. If it were not for this method of examination intestinal stasis would still be discussed under the term constipation. Therefore it is essential that the roentgenologic foundation be sound, solid, and scientific or the whole superstructure will fall.

The indirect or continental method of examination, based on the detection of symptom complices, is as the name suggests, simply the observation of various groups of symptoms by an unusual method and not direct evidence of the lesion itself. Each roentgenologist complies his groups of symptom complices, corresponding to the different diseases he has to diagnose, with the result that they are as varied as the observers who describe them. The direct method, on the other hand, is based on the detection of morphologic changes in the wall of the gut, or direct evidence of spasms of functional origin, by means of roentgenograms or serial roentgenograms.

Roentgenology may become a two-edged sword. The damage and danger of its use cannot be overestimated, when roentgenograms are used by the surgeon to demonstrate a preconceived

diagnosis and to force the patient to submit to surgical procedure. Jordan told me that at first he seldom found roentgenologic evidence of kinks in the various portions of the small intestine, but that Mr. Lane told him they were there, and that he must find some way to demonstrate them roentgenographically. This he proceeded to do, and very graphically described among other phenomena the writhing duodenum, due to obstruction at the duodeno-jejunal junction. Now this condition does exist, and I have demonstrated it roentgenocinematographically, but it is not found with anything like the frequency that some observers would lead us to believe. A writhing duodenum may be obtained in any case, as Holz knecht has shown, simply by exerting pressure on the duodeno-jejunal junction and pressing it against the spinal column. Great care must therefore be observed to differentiate between real and artificial obstruction at this point. There are likewise cases supposed to be suffering from kinks of the terminal ileum and ileal stasis, which show no roentgenologic evidence of delayed evacuation at this point. The roentgenologic diagnosis in such cases is based on mobility under deep palpation of certain localized areas of the terminal ileum during fluoroscopic examination. Personally, I believe that this is insufficient evidence upon which to base a diagnosis of ileal stasis requiring surgical relief.

In other instances the diagnosis of intestinal stasis has been based on the length of time during which bismuth was observed in the terminal portion of the ileum after its ingestion. For this consideration the fundamental question is,—what is the normal time for the bismuth to remain in the terminal ileum? Jordan, in his recent tour of this country, illustrated cases of "ileal stasis requiring surgical procedure" by demonstrating slides showing retention in the terminal ileum six, six and one-half, and seven hours after the ingestion of bismuth. When I put the question to Sir Arbuthnot Lane, he stated that he "felt uneasy about ileal stasis after the seventh hour following the ingestion of bismuth." According to Lane, therefore, seven hours is the limit of time during which chyme may normally be found in the ileum after the ingestion of bismuth-impregnated food. I habitually make roentgenograms of the entire gastro-intestinal tract during the seventh hour after ingestion and in more than 98 per cent. of all the cases examined bismuth has been found in the ileum at that time. In fully one half the cases there is a trace of chyme in the stomach, cap or duodenum during the seventh hour. In other cases, particularly if the stomach is of the cow-horn type, complete gastric

evacuation takes place in two or three hours. Here is an important source of error in reckoning ileal stasis. If ileal stasis is reckoned from the time of ingestion, the problem becomes a complex one, that of ileal stasis plus gastric retention. To determine the degree of stasis in the ileum one may reckon the period that elapses between the ingestion of food and the time when the first bismuth-impregnated food passes into the cæcum, except in cases of stasis due to insufficiency of the ileo-cæcal valve. These results may be checked up by noting the time that elapses between the complete evacuation of the stomach and the evacuation of the ileum. The first is the more accurate and convenient method of determining true ileal stasis, because when the ileum is dilated one usually observes an accompanying functional gastric retention, which may be prolonged for eight, ten, twelve, or fourteen hours without any organic obstruction of the pylorus or cap. This of course prolongs the ileal stasis, because the chyme is four to eight hours late in arriving at the ileo-cæcal junction.

Roentgenologic evidence indicates that ileal stasis or rather ileal dilatation may be caused by (1) incomplete evacuation or atony of the cæcum and ascending colon, (2) various types of membranes and veils involving the colon, (3) kinks of the terminal portion of the ileum, (4) insufficiency of the ileo-cæcal valve, (5) chronic appendicitis (primarily or secondarily from adhesions, either before or after the appendix has been removed). All of these conditions may be recognized and differentiated from each other with a remarkable degree of accuracy by a thorough roentgenologic examination, preferably in conjunction with a serial roentgenographic examination of the stomach and duodenum.

The symptoms of ileal stasis are rather varied because sometimes the symptoms of the cause prevail, and sometimes the symptoms of the effect prevail, particularly those referable to the stomach and cap. These symptoms will be considered under the discussion of each cause.

Colonic stasis is perhaps the most common cause of ileal stasis. Since the time when man dispensed with forefeet and assumed the erect posture, it has been up-hill work for the ascending colon to evacuate itself. Overdistention of the cæcum and ascending colon constitutes a large proportion of colonic stasis. The dilatation and atony of this region is partly compensated for by the active peristalsis of the terminal portion of the ileum. In proof of this, bismuth-impregnated fæces will be observed in the cæcum much longer after a bismuth meal followed by a period of fasting,

than after a bismuth meal followed by the ingestion of food or possibly water. If the stasis (or constipation) in the ascending colon is persistent, unusual energy is demanded from the peristalsis of the terminal ileum. When its strength is not sufficient to break the blockade, delayed evacuation results, accompanied by a chain of symptoms, perhaps referable directly to the exciting cause, "cæcal constipation," or perhaps referred to the stomach and cap. To overcome this obstruction, bismuth-impregnated chyme may be seen frequently forcing its way up through the fecal accumulations in the cæcum and ascending colon, or the next meal succeeding the bismuth meal may be observed working up through the ascending colon. If in such cases the cæcum and ascending colon can be evacuated by properly applied manipulation, massage or even catharsis, previous to the ingestion of more food, stasis of food in the terminal ileum will thus be diminished, and often the gastric or duodenal symptoms referred to the right hypochondrium will be relieved. Moreover lesions in this region of a much more serious character may perhaps be prevented.

The various types of veils and membranes involving the cæcum, ascending and first portion of the transverse colon undoubtedly cause an ileal stasis, either directly by affecting the colon or terminal ileum or indirectly by the associated constipation which blocks ileal evacuation. These lesions may be diagnosed with a great degree of certainty by roentgenography, preferably combined with roentgenoscopy. The drawing up of the cæcum, the irregular filling defects in the colon, and particularly the "double-barrel-shotgun" appearance of the ascending and first portion of the transverse colon, referred to by George, are very characteristic roentgenographic findings. Such conditions are undoubtedly important factors in the cause of obscure symptoms referred to the stomach and cap, particularly those associated with hyperchlorhydria, and should be searched for when the right hypochondrium fails to reveal the seat of the trouble. Sometimes the direct symptoms of constipation are so severe that the presence of gastro-duodenal symptoms is entirely overlooked.

I fear that the treatment of these conditions is not so simple as some surgeons would lead us to think. One group of surgeons will split these membranes, remove the veils, and watch the colon pop out of its cage, believing that the patient is freed from symptoms forever. Unfortunately they are likely to return, renewed by the conditions which originally caused them, or by the trauma of manipulation from surgical procedure. In other cases where there

is atony and dilatation, some surgeons attempt to reduce the size of the colon and hold it in position by artificially producing the conditions which the aforementioned group of surgeons try to destroy. The most successful method of surgical treatment for such cases could be determined by post-operative roentgenologic investigations in conjunction with careful clinical observations.

Kinks in the terminal portion of the ileum, either with or without mobile cæcum, undoubtedly do occur and cause the group of symptoms described by Lane and recognized by others. On several occasions I have been able to recognize them with an accompanying dilatation of the proximal ileum, and I have been able to demonstrate them to the most sceptical observer. But these kinks are a rare rather than frequent cause of ileal stasis. Where a kink really exists and causes ileal stasis and dilatation, especially if it is associated with symptoms, surgery for its relief is undoubtedly indicated. But operative procedure intended for the relief of such kinks will not cure all cases of ileal stasis, nor relieve the accompanying symptoms. Furthermore if the stasis is not caused by a kink, operative procedure may aggravate the symptom.

Insufficiency of the ileo-cæcal valve is a condition which I first recognized in 1902. Out of the cases examined since that time, I have observed about two hundred and fifty cases of this irregularity, and have used every effort to arouse the interest of surgeons and practitioners in the subject without success. Even now in cases where the clyisma passes all the way to the duodenum, and the patients present marked abdominal symptoms, surgeons and practitioners refuse to attribute any significance to this finding. I find that the only way I can interest them is to ask if they would expect symptoms, if they fed their patients fæces removed from the colon. I have failed to report this group of cases, at first because the question of tuberculosis occupied my attention and later because my efforts were concentrated on gastro-duodenal lesions. Kraus, Schwartz, Holzkecht, and more recently Groedel and Dietlan, have reported roentgenographic observations of ileo-cæcal insufficiency. Case has published an article, and on several occasions demonstrated slides, showing the frequency with which this lesion manifests itself. Its clinical aspects have been described by Kellogg, who has recently devised an operation for repairing an incompetent valve, and a method of constructing an artificial one, which will undoubtedly create a great interest in the whole subject.

Some of my cases of insufficiency of the ileo-cæcal valve, particularly the first ones that I recognized as such, where the bismuth had passed a long distance up the small intestine, were associated with periodical attacks of nausea, vomiting, fever, prostration and headache, and with cramping abdominal pain, especially marked in the right quadrant of the abdomen. This is the group of symptoms which is attributed variously to bilious attack, migraine, auto-intoxication, and frequently appendicitis. Sometimes, if the symptoms are sufficiently indefinite, the patient is permitted to retain his appendix, at least temporarily, in case it has not been removed already.

Reflecting on the roentgenologic evidence, it occurred to me that this group of obscure symptoms was very likely due to the influx of large quantities of fæces, loaded with bacteria and their products from the colon, where they are normal, into the small intestine, which is relatively sterile compared with the colon. To increase my confidence in this theory, I found that the severity of the symptoms was proportionate to the length of the small intestine which the cæcal contents traversed. Many cases were observed, presenting a mild degree of insufficiency, and the accompanying symptoms were only slight, or if acute, the attacks occurred at long intervals. Kellogg and Case have already referred to the ileal stasis, caused by or associated with this lesion, and my experience corroborates their observations.

The importance of insufficiency of the ileo-cæcal valve justifies a communication limited to that subject alone, but it is impossible to consider it further in this communication, where it has been introduced merely as one of the potent factors in ileal stasis, and consequently in spasmodic and organic lesions of the stomach and cap.

The roentgenologic findings of chronic appendicitis are of immense diagnostic importance. The appendix, partially or completely filled, has occasionally been found by many roentgenologists, and exhibited at meetings or perhaps reported as a monstrosity. But Case and George deserve the credit of observing the appendix roentgenographically often enough to justify them in drawing conclusions as to the significance of its roentgenographic appearance. Adhesions accompanying an involved appendix which flatten the side of the cæcum are frequently observed both before and after an appendectomy, and in my opinion are of more significance than the actual demonstration of the appendix itself, unless it retains the bismuth content for many days.

In summarizing the foregoing remarks it may be said that ileal stasis does occur, but not as frequently as some observers claim to find it. Its presence is due to or associated with colonic stasis and dilatation of the ascending colon, pericolonic veils and membranes, kinks of the terminal ileum, insufficiency of the ileo-cæcal valve, and chronic appendicitis, before or after the removal of the appendix. The common error in reckoning true ileal stasis, together with the custom of operating for the relief of stasis which does not show roentgenographically, has been sowing to the wind, and even conservative roentgenologists throughout the country are reaping the whirlwind of criticism. The use of roentgenograms as a weapon with which to urge surgical procedure for some preconceived diagnosis should be vigorously condemned.

MEDICAL COUNCIL EXAMINATIONS

THE examination of the Medical Council of Canada was held at McGill University, Montreal, on October 13th. The following candidates have been successful and will be enrolled on the Canada Medical Register: H. D. Bayne, S. J. T. Bean, L. O. Beauchemin, D. E. Bell, J. P. Bilodeau, J. A. R. Biron, J. E. Bourget, J. T. Bowman, G. C. Brink, N. Brown, W. A. Brown, L. E. Clark, H. C. Dixon, J. A. Dobbie, E. J. Eacrett, L. Elliott, L. S. Foster, A. W. Furness, W. C. Gowdey, N. M. Halkett, H. M. Harrison, W. R. Jaffrey, M. L. Jewett, A. S. Kirkland, C. F. Knight, T. H. Lennox, L. P. Machaffie, J. S. McDiarmid, G. D. McIntyre, L. H. McKim, H. C. Mersereau, J. G. H. Morin, F. J. Murton, T. Nepven, J. Norman, J. E. O'Donnell, J. W. Peck, L. T. W. Penney, H. H. Planche, J. R. Rheaume, H. V. Robinson, A. Ross, W. W. Ruddick, C. M. Scott, W. L. Shannon, J. N. Smith, J. J. Trudel, C. K. Wallace, A. B. Walter.

Of the remaining candidates, twenty-two were rejected and fifteen were referred back to take supplementary examination when occasion next offers.

THE EARLY DIAGNOSIS AND PROGNOSIS OF PULMONARY TUBERCULOSIS BY ROENTGEN METHODS

BY A. L. GRAY, M.D.

Richmond, Va.

IT is now a generally accepted fact that practically all cases of pulmonary tuberculosis are curable, if treatment is begun and persistently carried out before the involvement has progressed to the point of overwhelming the resistance of the individual. It is also agreed that the point of clinical significance is not whether there is or has been an infection, but whether the infection is, at the time of examination, of such a character that it may increase and whether the involvement is or is not sufficient to merit active procedure. With the foregoing ideas constantly in mind, I have attempted to work out a technique that would enable me not only to discover the disease, if present, but to predict with some degree of accuracy the future progress of the case under consideration.

With all due regard for the roentgenoscopist who claims to detect incipient tuberculosis by screen examination, and also for the most excellent work of those who maintain that certain characteristic "linear markings," that are said to be present in the roentgen plate of the tuberculous lung, I am free to confess that my best efforts with both of these methods have failed to give me the results that I have obtained by other means. I can not conceive of an involvement in its very early stage causing a failure of portions of the lung to "light up" properly, producing limitation of excursion of the movable structures, or casting a sufficiently well-marked shadow on the screen to give a definite visual impression. I have been unable to find the so-called "linear markings" in many cases of unmistakable early tuberculosis in which the subsequent course unquestionably proved the diagnosis.

The single front and back plates have the disadvantage that superimposed structures may mislead. Lesions may be obscured by normal shadows, or the crossing of branches of the bronchial

tree may give the impression of a pathological process. Both of these difficulties are obviated by the perspective of the stereoscopic pair.

The objection has been raised that the usual method of making one stereoscopic pair with the plates in front of the chest fails to show lesions that are distant from the plate. The advent of the sharp focus, tungsten target tubes has largely overcome this so that lesions behind the hilum are almost as readily detected in the average individual as those near the anterior surface. If, however, the posterior branches of the bronchial tree should not be clearly defined, a second pair should be made with plates behind the chest.

The question naturally arises, if practically every individual has in his or her lungs the marks of tubercular infection, when are we justified in rendering a positive diagnosis or when is it permissible to say that tuberculosis may be excluded? The number and especially the condition of the lesions present should be the determining factors, when added to the clinical history of the patient.

Since the characteristic lesions produced by the bacillus tuberculosis are tubercles, it seems reasonable to search for these in our examination, and unless they be found, a positive diagnosis of tuberculosis should not be made, however much infiltration or glandular enlargement may be present. Bronchial gland enlargement may be, oftener than otherwise, due to tubercular infection, but many diseases other than tuberculosis may give rise to this condition. Thickening at the roots may be due to infiltration or deposits caused by any prolonged infection or irritation of the bronchi or mediastinal structures. While these are suggestive they should never be considered as alone pathognomonic.

I consider a positive diagnosis of active tuberculosis unjustifiable unless discrete, soft tubercles can be plainly demonstrated. In advanced cases interstitial infiltration and tubercular coalescence may have proceeded to the extent of solidifying the greater part of one or both lungs, but if the process has been recently active, discrete lesions may be detected outside the solidified area. It is amazing how extensive an involvement may be carried without the slightest inconvenience so long as it remains inactive and the process of cicatrization or calcification proceeds without additional involvement.

Much depends upon technique in securing plates that are trustworthy. While perspective is far more perfect when the lung tissue appears dark, this is obtained at the cost of a proportionate loss of detail. It is far better that the plates be under-exposed than

that the lung structure be wiped out by an exposure with a soft tube giving the beautiful contrast and perspective that are obtained when the bony thorax is under consideration. My practice is to use the highest tube that will take the current and to make the shortest exposure that will give me a readable plate without the use of intensifying screens. If each exposure does not exceed a quarter of a second, in a large proportion of the cases the plate will not show the blurring of the hilum shadows caused by the cardiac and arterial impulses. Not infrequently the heart may be caught in the same phase of its cycle in both plates and its sharply cut contour and perfect perspective present a most striking picture.

The posture of the patient and direction of the tube-shift are matters of individual preference and convenience. The antero-posterior depth of the chest is probably brought out better by shifting parallel with the long axis of the body. The cross shift gives a better impression of the apices and enables the operator to adjust more accurately the patient to the size of the plate. It also gives a better impression of the relation of the mediastinal structures. The front of the chest should be in firm contact with the surface covering the plate changer and the shoulders should be drooped and drawn forward until they also touch it. The arms with the fore-arm slightly flexed should be kept well away from the chest-wall and rotated inward so that the elbows are thrown out from the body. The chin should project straight forward over the margin of the table, or else, if the plate changer will not admit of this, the head should be rotated at right angles, care being taken that in so doing the shoulder is not lifted from the table. The patient should be carefully drilled in holding the breath on deep inspiration without raising the shoulders from firm contact with the table. By these means the apices are brought into the closest possible proximity to the plate, and the mass of muscle which results from extending the arms above the head is avoided.

In examining the plates, there should be noted the shape and characteristics of the thorax, the heart and mediastinal structures, the comparative height of the two sides of the diaphragm, its contour, the "cardio-hepatic or cardio-diaphragmatic angle," the "costo-diaphragmatic angles," and the condition of the pleuræ. Each lung should be studied first at its hilum, then along the bronchial tree to its ultimate visible ramifications, and the lung tissue should be minutely searched lobe by lobe, noting the presence of glands, thickening or infiltration at the roots, thickening of the bronchial branches, furring and studding of the bronchial tubes,

areas of atelectasis, emphysematous spots, dilated bronchi or bronchial tubes, interlobar pleural thickening, areas of consolidation, and whether or not, if present, the consolidation is homogeneous or mottled, the presence or absence of tubercles, their density, and the presence or absence of calcification or scar tissue formation.

Much information concerning the patient's resistance can be obtained by a careful consideration of the tuberculous lesions present. The degree of calcification and amount of scar tissue are very accurate indices of the ability of the patient to care for involvement. Individuals differ greatly in the method of healing the diseased areas. One will exhibit a large amount of scar tissue and little calcification, while another shows chiefly calcification with little fibrous tissue increase. Since the roentgenologist is rarely called upon at the beginning of the first infection there are nearly always marks of previous lesions that may guide him in his prognosis. In those exceptional cases of truly primary involvement, a second examination after an interval of a few weeks or months will usually furnish the desired data.

A HOSPITAL bearing the military number forty-seven has been established at the Rue de la Chaise, Paris, and it is the intention that it shall be maintained by the parishes in the province of Quebec. The cost of each bed will be one dollar a day and each municipality in the province is asked to contribute one hundred and fifty dollars, or sufficient to maintain one bed for five months. The provincial government has contributed \$10,000 to the fund, which will provide for a ward containing about seventy beds with attendants; the ward will be known as the Provincial Government of Quebec Ward.

THE SUBCUTANEOUS INJECTION OF OXYGEN

BY H. O. HOWITT, M.D., L.R.C.P. (LON.), M.R.C.S. (ENG.)

Guelph

EVERY practitioner finds some time or other the giving of oxygen to be indicated as a therapeutic measure, and he gives it—with results so indifferent that beneficial effects are invariably of note only by their absence.

I have given oxygen a great number of times since Derose's article was published in *The Medical Press Circular* of May 1st, 1912. I believe this method to have been unused before in this country, except for the treatment of milk fever in cows. With this disease the milching cow suddenly goes off its food, relaxes its neck muscles, loses interest in its surroundings, falls, and the hind legs become useless. The cow is apparently about to die, until a veterinary surgeon, well up in his work, arrives on the scene and injects oxygen into the udder, and almost instantaneously the animal recovers. I am informed that when this treatment is not used the cow frequently dies within three or four hours from the onset of the symptoms. Acting on this principle, Dr. Williams reported in August, 1912, intra-mammary injections of oxygen for eclampsia, and attributed any beneficial effects which were noticeable to absorption of the oxygen.

Delmas and Delmas in 1912 reported excellent success in resuscitating asphyxiated infants by this method. Derose recommends the use of oxygen by the subcutaneous method in cases of tuberculosis with dyspnoea, and remarks that "the temperature falls and a feeling of well-being immediately prevails, for which the patient is very grateful, and sleep, previously impossible, becomes soothing and refreshing." He suggests its employment for (1) the toxic dyspnoea of uræmia, (2) eclampsia, (3) carbon di-oxide poisoning, (4) in certain cases of diabetes, (5) emphysema, (6) pertussis, (7) asystole, and (8) in those cases where mechanical obstruction is precisely located in the air passages.

My experience, which now covers nearly two years, includes the dyspnoea of tuberculosis, gas poisoning, pneumonia (lobar and lobular), œdema of the lungs, bronchial asthma, and operative

cases. In no case were any ill effects noticeable, either at the time or afterwards. One asthmatic said that it relieved him, but I did not notice appreciable improvement. The carbon di-oxide case may have recovered without the injection, but in some of the pneumonia and operative cases the results were simply astounding.

CASE 1. One of my early experiences was with a man whom I had a few days before operated on for perforated gastric ulcer. He had a well-marked bronchitis at the time of operation which developed into pneumonia. The case rapidly became apparently hopeless; there was no noticeable breathing, the pulse was imperceptible, a cold clammy sweat had broken out on the forehead, the extremities were actually cold at the knees and elbows. I injected oxygen subcutaneously and *in less than one minute* the man could speak with a fairly strong voice, the pulse returned with fair volume, the colour reappeared in the skin, and he breathed easily. There were three astounded witnesses to this scene, or I would refrain from mentioning it. Subsequently the man made an uninterrupted recovery.

CASE 2. A woman, sixty-six, with lobar pneumonia; temperature $103\frac{1}{2}^{\circ}$, respirations forty-six, rapid pulse, rusty sputum. The condition became alarming on the fourth day from the onset. Oxygen was injected. The temperature dropped a degree, and almost at once the breathing became less laboured, and the patient was very grateful. Injections were given twice daily, and the case no longer resembled pneumonia.

CASE 3. A young man with lobar pneumonia. He was quite delirious, and had not slept for sixty hours. In an unwatched moment he crawled out of the window into the snow. On his return to bed oxygen was injected, and before the needle was withdrawn he fell into a sound sleep which lasted two hours. What is particularly interesting about this case is that the injection was intramuscular and apparently was the only thing that gave any relief. This patient succumbed some three days later.

CASE 4. A young woman with lobar pneumonia, temperature 104° , pulse 150, respirations 46 to 52, and apparently about to die. This was three days from the initial chill. With these conditions I took over the case, injected oxygen subcutaneously and she made a rapid recovery. Of course this injection may have coincided with a third-day crisis.

CASE 5. Dr. Orton, of Guelph, informs me that he was about to operate on a case for empyema when the patient suddenly stopped breathing, turned extremely cyanotic, and those present

considered the end had come. The anæsthetic was immediately stopped and oxygen subcutaneously injected. At once the cyanosis disappeared and the pulse and breathing returned. The operation proceeded, with eventual recovery.

CASE 6. Dr. J. McCrae, of the Royal Victoria Hospital, Montreal, wrote me to the following effect: In only one case in thirty were the results of oxygen *sensational*. This was a man aged thirty-four, just operated on (excision of the bowel for new growth). Three hours after the operation the man appeared to be dying. The lungs were œdematous. Respirations were shallow and rapid, and Dr. McCrae's impression was that the patient would die within the next fifteen minutes. Four injections of oxygen were given, and the man recovered without alteration of the respiratory rate, and the oxygen immediately increased his comfort.

The following is a description of the apparatus and the method of its use: Oxygen is generated from sodium peroxide coming in contact with water in a closed cylinder, and the gas set free escapes by means of a long rubber tube, at the distal end of which is an aspirating needle which is inserted into the subcutaneous tissue. The tube is then oiled and by a pumping action of the hand, sufficient force is used to raise a lump once or twice as large as the closed fist.

The oxygen injected by this method forms a local emphysema which lasts for hours and may travel over the surface of the body. Apparently the body only absorbs that which is necessary. It is really the formation of an artificial lung. I have never known a single ill effect to follow its use; in every case where the breathing was laboured, the patient experienced some relief. In some cases, the ones I have mentioned, the results were almost as wonderful as a chapter from the "Arabian Nights," and were witnessed by several medical men and nurses. Before passing judgment, I would ask that it be given a fair trial. One case like these mentioned, among a great many who were helped only a little, would make it well worth while.

It is not a "sure cure" for pneumonia or any other disease, but when oxygen is *urgently* needed by the cells of the body this method of introduction of oxygen fills the requirement. In my experience the old method of inhalation was a failure.

Case Reports

OBSTRUCTION OF THE JEJUNUM TWO FEET FROM ITS ORIGIN

INTESTINAL obstruction is always interesting, and the case which I am taking the liberty of presenting to you is especially so as it involved the jejunum high up, being only about two feet from the duodeno-jejunal juncture. The history is as follows:

Mrs. R., aged thirty, was seen with Dr. J. A. Bauer on April 5th, 1914. She had symptoms of acute obstruction of the bowel, with vomiting of fecal matter, abdominal pain, tenderness and distension. The temperature was below normal, and the pulse was fast, being 120, and of poor volume. The vomited matter contained several small, hardened, fecal masses the size of hazel nuts.

Previous history: She had always had bilious attacks even when a child, but escaped the usual diseases of childhood. She never had any serious diseases. She is the mother of three children, but never had any miscarriages.

Family history: Good; one grandfather died of tuberculosis; nine brother and sisters are living and healthy; one dead.

During the last few years she has been troubled with sickness of stomach, vomiting of bile, and constipation. These attacks would last for a day or two, and then disappear. In 1907 she had an attack of cramps in the abdomen, and vomiting. She was in the hospital for ten days. During this time there was no fever. She had constipation, rumbling of gas in the abdomen, but no attack until April, 1913, when there were obstructive symptoms with abdominal distension, peristalsis of the bowel, usually seen in the upper left, and later in the upper right abdominal region, and rapid pulse, but no fever. Her condition was so serious that she was taken to the City Hospital and operated on by Dr. L. W. Cockburn, of Hamilton. Some adhesions in the transverse colon were separated and the abdomen closed. She made a rapid recovery, and enjoyed fairly good health during the summer, but the peristalsis was still seen in the upper left abdominal region. In November, 1913, she went to England, and spent the winter there. She returned to Hamilton in the early part of the year much improved

in health, having gained considerably in weight. She, however, was never quite free from distress in her abdomen.

In March she began to experience her old symptoms of crampy pains, belching of gas, peristalsis of the bowel, and marked constipation. She lost weight rapidly. She consulted Dr. Bauer who examined her carefully, and concluded there was a chronic obstruction of the bowel. An x-ray was made after a bismuth meal, but the exact site of the obstruction could not be determined. On Sunday, April 5th, symptoms of acute obstruction appeared, and I saw the lady with Dr. Bauer. She was removed to the City Hospital and the stomach washed out. We were unable to decide where the obstruction was before operation. Although the abdomen was distended no peristalsis could be seen or felt. The abdomen had been opened in the median line at the previous operation, and as the obstruction was believed to have been due to bands around the transverse colon at the operation the year before, I decided, owing to the gravity of the patient's condition, to make a gridiron incision in the right iliac region and drain the cæcum, provided the small bowel was distended at its junction with this part of the larger bowel. However, when the cæcum was exposed the ileum was found contracted. On introducing the hand into the abdominal cavity, the upper part of the jejunum was found enormously distended and obstructed by a band about two feet from the duodeno-jejunal juncture. The bowel proximal to the obstruction was two and one-half inches in diameter, while the bowel distal to this band was less than half its normal size.

The obstructed part could be drawn out of the wound quite easily. The distended bowel, after the wound and abdominal cavity had been carefully protected with gauze moistened with warm saline solution, was opened. A Paul's tube was inserted and quite a large quantity of fluid feces escaped. The bowel coats were enormously hypertrophied, yet no peristalsis could be provoked. The bowel was then washed out and also the stomach. Some round, hard, fecal masses came away from the bowel, and some fluid with fecal odour from the stomach. A normal saline was given interstitially, and also saline by the rectum. This was repeated during the next few days as the patient was in a precarious state. The bowel began to drain through the tube, and the patient gradually gained in strength. Six days later as the patient was in fair condition an anæsthetic was given, and the bowel resected. The dilated bowel was found reduced but little in size, and the coats were more like those of the stomach than of the

bowel. A large lateral anastomosis was made, and the abdomen partly closed. She was very weak after the operation, but responded nicely to interstitial and rectal salines, and was able to leave the hospital sixteen days after the second intervention. Since her return home she has had two short attacks similar to her old ones, but she has gained in strength and weight. Constipation is present although liquid paraffin has helped very much to relieve this condition. There has been no vomiting of bile and no visible peristalsis since the last operation.

The specimen removed is extremely interesting. The bowel is constricted to such an extent that only a small circular opening one-eighth inch in diameter exists. On the distal side of the opening is a small nodule, the size of a small pea, similar to a small indurated pile. The band which constricted the bowel is composed of fibrous tissue which probably resulted from an old diseased lymphatic gland. A section of the small nodule shows fibrous tissues covered with epithelium. The hypertrophy of the walls of the proximal bowel is in the muscular coat.

In this case there were two attacks of acute obstruction requiring operation. Dr. Cockburn informed me a few days after my operation that when he operated the lady was in a very serious condition, the transverse colon was obstructed by a fibrous band which he divided and then closed the abdomen. The patient made a quick and rapid recovery, she gained weight rapidly, and no further trouble was anticipated.

She informed me, however, that during the summer following she still had attacks of rumbling in the bowels, and swelling in the upper left side of the abdomen, but observed none in the right side. At the second operation the obstruction was found in the jejunum. The constriction had evidently been produced by a diseased lymphatic gland. It is hardly possible that this diseased gland had produced the constriction of the colon, as well as that of the jejunum, as no bands connected the two bowels. That the stenosis of the jejunum was of long standing is proved by the tremendous hypertrophy of the proximal bowel together with its inability to return to anything like its normal size after six days drainage. One can easily understand this lesion being overlooked at the first operation on account of the serious condition of the patient, and the evident cause of obstruction in the colon. Since the last operation there has been no bilious vomiting, and no observable peristalsis, yet she has had cramps on two occasions. She lays great stress on the bilious vomiting, and one can easily

understand this could be a prominent symptom when a chronic obstruction existed so near to the beginning of the mid-gut. Just what produces the cramps which she has had since returning home, I am unable to state. If a median instead of a lateral incision had been made, I would undoubtedly have been able to explore the region better, but at the time the lateral opening seemed to me to be the better one. Her condition, however, is very good and she has gained in weight. The loss of weight which the patient had at each time when there were obstructive symptoms is very interesting, showing the lack of absorption of fluids and nourishment.

It is also interesting to note the hardened fecal masses found in the small bowel, some of which she vomited. The presence of these indicated the site of the obstruction, and had I recognized the fact, I would have made a median incision. The result, however, might not have been so fortunate.

INGERSOLL OLMSTED, M.B.

At the special war examinations of the Royal College of Surgeons and the Royal College of Physicians, held October 9th and 10th, the following Canadians were admitted members of both colleges: Lyle John Cameron, Manitoba University and London Hospital; William John Cook, McGill University and London Hospital; Robert Owens Fisher, Toronto University and Middlesex Hospital, and Arthur Baker Le Mesurier, Toronto University.

ERRATUM

IN the October number of the JOURNAL on page 872, thirteenth line from the top, Crum Brown, of *Boston*, should read Crum Brown, of *Liverpool*.

Editorial

INTESTINAL STASIS

IN these days of scientific advertising we are forced to admit that the man who has a good sound article is repaid a hundredfold by using scare headlines and bringing it insistently before the public. By flaunting it before the common gaze even a second class article is assured of large sale until such time as the public has weighed it and found it wanting. Members of our profession are at last coming to learn the lesson taught by the vendors of proprietary medicines, and to recognize that a new idea in diagnosis, or new method of treatment must be pushed powerfully if it is to be rapidly taken up. It used to be said that ten years elapse before any material advance in medicine becomes accepted by the profession at large. Sir Arbuthnot Lane himself can adduce valuable observations and deductions which, made by himself in the eighties and published after the old style in highly respectable periodicals, gained no general recognition, were in fact buried until altering his tactics he took to propagandism and shouting his wares from the (strictly medical) house tops. Now, thanks to the new methods, everybody knows of Sir Arbuthnot Lane, his doctrine and his methods, nay, more, is apt, through no fault of his, to give him (as pointed out by Dr. Max Einhorn) the credit for pioneer work accomplished by others, such as Glénard and Metchnikoff, men upon whose observations his own advance has been based. Perhaps, after all, this is as it should be: it is not the discoverer who deserves the fuller meed of appreciation and gratitude from his fellows, but he who so applies the discovery as to make it of prime benefit to humanity. Some years before Lister's work on the subject, the powerful antiseptic properties of

carbolic acid had been very fully studied and recorded (in our frailty we have forgotten to whom we owe the observations) but Lister it was who demonstrated how it should be employed, and to him is the credit and the glory. It will be recalled, by the by, that ten years and more elapsed before Lister's great advance became generally accepted.

How is it going to be with the gospel according to Lane? Is he advertising a first class or a second class article? In this number we publish the full-dress debate held at the St. John meeting of the Canadian Medical Association. Judged from that it is evident that the time is not ripe for arriving at a decision. This much is clear, that everybody admits the existence of cases in which fæcal retention is the cause of serious trouble, especially when that is due to organic as distinct from functional obstruction. Most medical men, physicians as well as surgeons, will accept Dr. Primrose's thoughtful presentation of the case and cautious conclusions. This is equally clear, that everybody does not accept Sir Arbuthnot's gospel of short-circuiting as a remedy for most of the ills that afflict our race. As regards the large bowel, it is becoming increasingly evident that the view of Metchnikoff and Lane that this is merely the common sink of the economy, and so a useless encumbrance, cannot be accepted. Dr. Elder's recommendation that where obstruction exists, the effort must be made to cut off the minimal amount of bowel, is one that must gain approval. So also, judging from the recorded cases, there is force in Dr. McPhedran's contention that, save where obvious signs of obstruction are present, medical treatment while long, is after all no longer in securing good results than is surgical. In other words it is significant how large a proportion of cases of removal of adhesions, and even of short-circuiting, fail to attain satisfactory results, and require a second and third operation.

Thus while enthusiasm is good, here as always it has its dangerous side, and has to be guarded against. Lane has done excellent service in calling increased attention to the

train of evils which may follow obstinate constipation, and to the treatment of the same. Undoubtedly good results must follow the fuller study of this subject. The danger lies in diagnosis and operation based on imperfect data, and here the *x-ray* expert, too often inexpert, shares responsibility with the surgeon. There is surely something wrong when Lane regards as pathognomonic the presence of bismuth in the terminal portion of the ileum seven hours after its ingestion, and when Dr. Cole finds that 98 per cent. of all the cases examined by him show bismuth still in this region at this period. There is still abundant work to be done both clinically and pathologically before this matter of intestinal obstruction, its etiology, and its results can be placed upon a right basis.

But ye gods! Dr. Cole! Where is your feeling for the language you employ to express your thoughts, when with evident enjoyment you besprinkle every other line or so of your communication with such words as "roentgenology" "roentgenograms," "roentgenologic," "roentgenographically," "roentgenocinematographically"? Away with them! Or is it that your name is but a transliteration of "Kohl"? This windy terminology, and habit of repeating, reminds one of "*crambe repetita*"; although your prenomens do not seem to bear this out. We are not Germans, nor does our language permit such monstrous centipedal hybrids: if we sought revenge, we well might be impelled to label your crime as *coleocacography*,* How would that please you? And what, pray, in accepted anatomical language is the "cap"?

IMPERIAL RECIPROCITY

THE following resolution was adopted unanimously by the Medical Faculty of Queen's University on October 23rd:

"Whereas a number of physicians registered in Ontario

*Of course from *coleo*, *cultum*—I cultivate (from which is derived "Kultur"), *kakos*—bad, *graphein*—to write, or otherwise, the faulty writing of a cultivated man, and his preference for a bad style, the introduction of German constructives into a literary language.

have volunteered for imperial army medical service and have not been accepted because the Ontario qualification is not recognized in Great Britain,

“Resolved, that in the opinion of the Medical Faculty of Queen’s University the time is opportune to establish reciprocal relations between the General Medical Council of Great Britain and the Medical Council of Ontario, and

“Resolved, that the Faculty suggest to the officers and Executive of the Ontario Council that a special meeting of the Council be held at the earliest possible moment to deal with this important matter.”

This is a question that has been agitating the profession in Ontario the past few weeks. It is not yet known what action, if any, the Ontario Council will take. The status of Ontario military surgeons serving with the Canadian Expeditionary Force is not involved, but only that of the physicians who offer their services directly to the War Office. At the present time the licencing bodies of four of our provinces, namely, Prince Edward Island, Nova Scotia, New Brunswick and Quebec, have reciprocal relations with the General Medical Council of Great Britain, by virtue of which their licentiates can register in Great Britain without further examination and, conversely, anyone holding British qualifications can register in these provinces. It does not, of course, necessarily follow that because the arrangement has worked satisfactorily in these instances, it would be to the interests of Ontario and the western provinces to adopt it. Conditions are somewhat different. There can be no doubt that when, some years ago, reciprocity was in force between Ontario and Great Britain, it gave rise to such abuses that the former was obliged to abrogate the arrangement. In particular, many Ontario students who found it inconvenient or impossible to fulfil the requirements of their own Council, successfully sought a loop-hole or short cut to the licence by taking out British qualifications. Whether there would be a repetition of the abuses at the present time is for the Ontario

physicians to decide. The matter is of greater importance to them than to the War Office, which has more pressing business on hand. Should the emergency demand it, the Ontario Council will doubtless find a way out of the difficulty. Whatever may be done, or left undone, if it hastens the logical development of the Dominion Council into the sole licencing body of the country, the agitation will not have been in vain.

THE WAR AND THE WOUNDED

THE first contingent of the Canadian Expeditionary Force has arrived safely in England and is undergoing a further period of training preparatory to leaving for the front. Another contingent of 10,000 men will follow, and the recruiting is proceeding rapidly; in fact applications are coming in so quickly that it is doubtful whether all those who now volunteer will be able to go with the next contingent. Arrangements are being made, however, to continue the training of troops after the embarkation of the next contingent and until the cessation of hostile activities. It is understood that 10,000 men will leave about the end of December. But it is not sufficient to send the men; provision must be made for the care of those who are wounded or fall ill from exposure and hardship. With exclusion of the Russian and Austrian armies, there are more than two millions now fighting in Europe. The loss of life and the number of wounded must be enormous, greater than in any previous war, not only because of the numbers participating but because of the deadly perfection of the modern invention; and from experience in former battles it is to be expected that the sick and wounded will number at least 20 per cent. of the armies engaged in conflict, probably more. In the South African war, the British invalided 73,977 men out of an army of 325,000, which means that in the next few months there will be 400,000 sick and wounded soldiers in the armies taking part in the

European war. This percentage among the British troops may be decreased somewhat by the general inoculation against typhoid fever, but whether the same precaution has been taken in the other armies is uncertain, and as every wounded man becomes a subject for medical attention no matter what his nationality, the treatment may have less effect upon the numbers requiring medical care than might have been expected.

The Canadian government has provided that 2,090 beds shall accompany the first two contingents; about half of these have been sent with the troops now in England. That is, provision has already been made for two general hospitals each with 520 beds, two stationary hospitals each with 200 beds, one clearing hospital with 200 beds, and three field ambulances each with 150 beds. The personnel of medical officers, nurses, orderlies, drivers, and cooks will number about 1,100.

The work of the Army Medical Corps is largely supplemented by the Red Cross. In addition to the splendid work that is being accomplished by this society both in England and on the battlefield, a Paris branch of the British Red Cross Society has been formed under the direction of Dr. Leonard Robinson, Mr. Stanhope, and Dr. Bernard Harrison. Five hospitals have been organized in Paris, and the wounded are brought to them from the field hospitals. The Canadian Red Cross Society has already transmitted \$50,000 to the Central British Committee at London and lesser sums have been sent by local branches in the Dominion. In addition, supplies of every possible nature have been forwarded, and donations are solicited in order that the supply of such things as are needed may be continued.

A great loss has been sustained in the death of Colonel Jeffrey Hale Burland. Colonel Burland had identified himself very closely with the work of the Canadian Red Cross, and it was in great measure due to his efforts that the Quebec branch of the society was established in 1912. He was recently

appointed Red Cross Commissioner, and the news of his sudden death, which occurred in London shortly after his arrival there, was received with profound regret. Colonel Burland was a man of boundless energy and enthusiasm. He was a splendid organizer and was held in the highest esteem by rich and poor alike, and his loss will be very keenly felt. Dr. C. A. Hodgetts, of Ottawa, succeeds Colonel Burland as Commissioner of the Canadian Red Cross, and he has proceeded to England. He will carry with him the confidence of the whole community.

THE VANCOUVER MEETING

THE profession in Vancouver has taken up with enthusiasm the task of preparing for the next annual meeting. A large committee of active workers has already been organized. They are determined to make the occasion an assured success. Dr. W. D. Brydone-Jack is chairman of the Committee of Arrangements, and Dr. Frederick Brodie, 718 Granville Street, is secretary. Probably few of our members realize the great amount of hard work that devolves upon the local secretary in the course of the long preparations for an annual meeting. Dr. Brodie, by his activities in the Vancouver Association, has proved his fitness for this responsible and exacting office. The date of the meeting has been fixed for July 6th, 7th, 8th, and 9th.

The general trend of travel next summer will be towards the West, owing to the attraction of the Panama Exhibition in San Francisco. Europe will offer few inducements to the holiday-maker, even if the situation there should clear more speedily than there seems reason to hope. The American Medical Association will meet in San Francisco the second week in June, and consideration was given to a suggestion that our meeting should be so arranged that both could be conveniently attended. But it was wisely decided that a June meeting would probably be too early for the majority of

Canadian physicians, who seldom take their holidays before July. The Edmonton meeting three years ago did much to strengthen the position of the Association in Alberta and Saskatchewan, and the attendance was very gratifying, amounting to nearly three hundred, of whom about one-third travelled from the East. Vancouver has become one of the largest cities of the Dominion, and its medical facilities have kept pace with its growing commercial importance. The personnel of the profession in the Pacific province, under the able leadership of Dr. McKechnie, the president-elect, is of itself a guarantee that the Association will receive a hearty welcome next summer, and will enjoy a profitable meeting.

THE Canadian central branch of the Red Cross has transmitted the sum of \$50,000 to the British Red Cross Society. The Winnipeg branch has sent \$10,000, the Vancouver branch \$2,137, and the Ottawa branch \$2,000.

THE Bremerman Sanatorium, an institution devoted exclusively to urological surgery, is to be established at Potash Sulphur Springs, Lawrence, Arkansas. There will be a capacity of one hundred beds. Dr. Lewis Wine Bremerman has been appointed surgeon-in-chief.

A COURSE of lectures is to be given by Dr. L. Duncan Bulkley at the New York Skin and Cancer Hospital on Wednesday afternoons during the months of November and December. The lectures will be free to the profession on presentation of their professional cards, and each lecture will be preceded by a half hour clinical demonstration of dermatological cases. The subjects to be treated of are, nature of cancer; frequency and geographical distribution of cancer; metabolism of cancer; relation of diet to cancer; medical treatment of cancer; and clinical considerations and conclusions.

THE campaign against cancer is yet to be fought. In England and in the United States much is being accomplished to educate the people to the danger of procrastination. With our present knowledge, the only cure is prompt operation and before this is possible the lay public must realize that suggestive symptoms, however slight, must receive immediate attention, particularly in persons over forty-five years of age. In Canada and the United States, over eighty thousand deaths occur each year which are attributable to this disease and in 1913, in Canada alone, more than seven thousand persons died from cancer. The matter is considered in the August number of the *Health Bulletin*, issued by the Toronto Department of Public Health, and the facts there given should help to convince its readers of the importance of consulting a physician immediately any symptoms are discernible and before the onset of pain.

A LETTER has been received by Dr. Adami, of McGill University, from Dr. Alexander M. Burgess who, some months ago, was obliged to give up his work as pathologist at the Montreal General Hospital on account of the strain upon his eyes brought about by microscopic work. Dr. Burgess, who is now practising in Providence, Rhode Island, writes: "I have heard indirectly that a number of my friends are already in Europe and I hope that it will not be long before they are on this side of the water again. If we were not Americans we would certainly wish to be British, for we all feel that England's cause is most righteous. If any Montreal doctor wants an American to care for his practice while he is away there are several of us here who would be glad to get the opportunity."

THE reception hospital for persons suffering from mental defect, which has been established in the grounds of the old General Hospital at Toronto, was declared ready for occupa-

tion in August. The hospital is under the direction of the provincial secretary's department, and is in charge of Dr. Harvey Clare, the medical superintendent of the Queen Street Hospital. The regulations provide that non-alcoholics showing symptoms which necessitate observation shall be committed to the reception hospital, but the transfer of such persons shall not be made in the prison van. Should a patient be found to be not insane, or should the case be unsuitable for treatment, the person responsible for the admittance shall be charged at the rate of \$1.00 a day for maintenance. The duration of treatment in the reception hospital shall not exceed sixty days. If certified insane, the patient shall be transferred to one of the provincial hospitals for the insane.

THE pages of history teach us that a close connexion exists between the time of war and the time of scarcity. Since war with all its horrors is upon us, the provision of food supplies becomes of unusual interest. The *Breeders' Gazette* of September 23rd, published in Chicago, contains a letter written by Mr. George T. Burrows, of England, which makes the somewhat astounding statement that "meat can be kept in a frozen state for no less than eighteen years and can then be honestly and openly guaranteed as good for human consumption." It should be noted that throughout this period the beef was kept at practically the same temperature. Last July a hindquarter of frozen beef that had been shipped from Australia in February, 1896, was exhibited in London. It was sold to Messrs. Wills and Company, of Malta, who retained it in cold storage until it was sent to the government warehouse, London. "The meat, although somewhat faded in appearance, was found to be still sweet and sound and had lost but little if any of its nutriment." These findings were corroborated by Dr. S. Rideal, the food inspector to the London Meat Importers' Association, who undertook a scientific test of the meat in question. He found that it had

undergone remarkably little change, that the beef tea extracts obtained were very similar to those obtained from fresh beef, and that the dietetic value of the meat had not been impaired.

THE annual report of the Orillia Hospital for the Feeble-minded for the year ending October 31st, 1913, has now been published. Seventy-two admissions—thirty-seven males and thirty-five females—were made; the discharged numbered three, and the deaths sixty-one, the latter being largely attributable to an epidemic of pneumonia during the winter. The institution was filled to its utmost capacity and constant demands for admission were made during the year. The accommodation is being increased by the addition of a cottage capable of holding two hundred women patients. This building is almost completed and it is the intention that a similar building shall be erected for men patients. If this is done, the institution will consist of a main building and four cottages and will be able to receive one thousand two hundred patients. The main building, with its accommodation for four hundred patients, will then be used as a training school for boys and girls ranging in age from six to fifteen years; it has been observed that the most marked improvement is manifested between the ages of ten and fifteen and the industrial training of such children has met with great success. The girls spend a good deal of their time in needle-work and, though of low mentality, some of them produce beautiful work. The boys are employed outdoors, and in mat making, weaving, and basketry. Excellent results have been obtained from the work done in the pathological laboratory and Dr. Evans is now engaged upon a series of Wassermann tests, the results of which should prove of great interest.

Book Reviews

A TEXT-BOOK OF MILITARY HYGIENE AND SANITATION. By FRANK R. KEEFER, M.D., Lieutenant-Colonel, Medical Corps, United States Army; professor of military hygiene, United States Military Academy, West Point. 12mo of 305 pages, illustrated. Cloth \$1.50 net. Philadelphia and London W. B. Saunders Company, 1914. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

The moment for the appearance of such a book as this is most opportune, and a copy should be in the hands of every soldier who is able to read and takes an interest in his own health; for the health of the individual is after all, the health of the camp. The author is professor of military hygiene in the United States Military Academy at West Point, and every statement which he makes has been tested in the field. The book cannot be recommended too highly, and we desire in the strongest possible way to call it to the attention of the military authorities. It is quite true that many of the measures urged by Dr. Keefer were in operation at the Camp at Valcartier, but a reading of the book would inform the soldiers of the vital necessity of those measures and encourage their unquestioning compliance with the rules that are laid down for their own safety and for the efficiency of the force.

INTERNATIONAL CLINICS. Edited by HENRY W. CATTELL, A.M., M.D., and others. Volume II. Twenty-fourth series, 1914. Philadelphia and London: J. B. Lippincott Company. Canadian Agent: Chas. Roberts, Montreal.

One always takes up a fresh volume of International Clinics with interest; at least that has been the experience of the present reviewer for the past twenty years, and one is never disappointed. The articles are fresh and timely, and are always well written. In the present volume there are twenty-three studies by as many contributors and the subjects which are dealt with cover the whole range of medicine. In these clinics one is accustomed to look for scientific sobriety. To this the last article must be considered as an exception. In the opinion of the present reviewer, the article by Maria Vinton on the teaching of sex hygiene is vicious in its

tendency. It is a complete illustration of the indecency, immorality, and obscenity which is being spread abroad under the guise of science and education.

PUBLIC HEALTH LABORATORY WORK. By HENRY R. KENWOOD, M.B., F.R.S., D.P.H., F.C.S. Sixth edition, with illustrations. Price, 10s. net. London: H. K. Lewis, 1914.

Kenwood's "Public Health Laboratory Work" comes with unfailing regularity in edition after edition, until now the sixth is reached. The section on bacteriological work has been omitted, as the wants of students in that department are otherwise provided for. The book remains, however, as always, a sure guide to the chemical division of laboratory practice. The author proceeds on the sure ground of selection as the result of experience.

BLOOD PRESSURE: ITS CLINICAL APPLICATIONS. By GEORGE W. NORRIS, A.B., M.D., assistant professor of medicine in the University of Pennsylvania. Octavo, 372 pages, with 98 engravings and 1 coloured plate. Cloth, \$3.00 net. Lea & Febiger, publishers, Philadelphia and New York, 1914.

From the handsome dedication to this book, it would appear that the author in earlier life had suffered from an illness, and in a large measure owes his life to the skill, and self-sacrifice, and professional care of a colleague to whom the book is dedicated. These personal matters might well be omitted from a scientific treatise; for this book is scientific, and deals scientifically with all the machinery which is now existant for estimating blood pressure. But books upon this and kindred subjects are so manifold that one likes to get to the heart of the matter at once and can well spare quotations from the Fathers. "Experiment is not sufficient, experience must verify what can be accepted or not accepted: knowledge is experience."—"Felix qui potuit rerum cognoscere causas." These truisms might well be taken as already having been said.

During the past few years the subject of blood pressure has received much attention, and it has not yet been reduced to order. The matter is by no means so simple as it would appear, and much study is yet required before the significance of blood pressure is established. Dr. Norris quite properly points out that one-third of all cases of well-marked peripheral arteriosclerosis have normal or sub-normal pressure; and again, that a careful observer failed to find cardiac hypertrophy in more than one-third of all cases of

marked atherosclerosis. Extensive patchy atheroma is not consistent with extreme longevity, and it by no means follows that, even if the radial artery shows extensive changes, the more vital arteries and arterioles are therefore correspondingly involved. Dr. Norris is well aware of these phenomena, and whilst he has recorded the facts and explained the method of making such records, he has not gone too far in making generalizations from them. The great value of this book lies in this, that it will suggest excessive care in drawing inferences from mechanical readings of the various appliances for registering blood pressure. The book is quite new, and is deserving of most critical study by those whose confidence is yet intact as well as by those who are beginning to suspect that blood pressure alone is a dangerous sign to trust to.

DIETETICS: OR FOOD IN HEALTH AND DISEASE. By WILLIAM TIBBLES, LL.D., M.D., L.R.C.P., M.R.C.S., L.S.A. Octavo, 627 pages. Cloth, \$4.00 net. Lea & Febiger, publishers, Philadelphia and New York, 1914.

The title of this book is not attractive, as the number of books bearing the same title is legion, and we think that the author lays unnecessary stress upon the subject. He deems it of such importance to mankind, that he would have a professor of dietetics in every university and medical college throughout the world, and he would give to the subject the same prominence in the curricula of the medical student as is given to materia medica and therapeutics. He bases this doctrine upon experience in colleges of agriculture, where prominence is given to the study of animal and plant foods. "If such knowledge," says Dr. Tibbles, "is deemed of importance to the breeder of animals and grower of grain and fruit, surely it is of no less importance to the physician who has the care of the human body." The truth is that a study of animal and plant foods is of no value whatever to the breeder or the farmer. The best animals have been bred, and the best crops have been raised, by men who possessed no information whatever upon these matters excepting that which was drawn from experience and tradition. The normal man knows better than any physician what food is suitable for his needs. The human organism is not standardized, and one man's meat is another man's poison. Even if we admit, with the author, that life consists of a series of changes in the protoplasm, these changes are too swift and too subtle to be recognized by any of the machinery at our command. It is not the common experience that the person who reflects most upon his

diet is the most healthy one. Indeed too much reflexion would vitiate the value of any diet no matter how scientific it is. A man is not a body alone: he is a mind as well. And yet this book contains upon the subject all that is contained in similar books, and much more. The author is an enthusiast, and he has gathered together everything which pertains to the subject. He has made it a matter of record, and has presented it in a form so well classified that it is easily accessible.

A HANDBOOK OF FEVERS. By J. CAMPBELL McCLURE, M.D.
London: Shaw and Sons, 1914.

Dr. Campbell McClure, the author of this book, is a graduate of Glasgow and physician to at least three hospitals in London, therefore he has a double claim in appealing to an audience. This work, as the author informs us in the preface, pretends to be nothing more than a handbook for the use of students and general practitioners. Accordingly, he has confined his attention to the more superficial, yet none the less important, aspects of the diseases under consideration, but he has devoted ample space to the treatment of them. The book is admirably suited for the purpose for which it is designed. The material is contained within small compass and is arranged in proper sequence. By every test which we have been able to apply to this work, it would appear to be quite authoritative and in accord with the best practice.

APPENDICITIS: A PLEA FOR IMMEDIATE OPERATION. By EDMUND OWEN, F.R.C.S., D.Sc. Bristol: John Wright and Sons, Limited, 1914.

If this plea for immediate operation in cases of appendicitis were in the hands of every practitioner and if it were acted upon, countless lives would be saved. The profession is under a deep debt of gratitude to Mr. Owen for having put forward this plea with the whole weight of his authority. A physician who advises immediate operation is never wrong. One who delays may be wrong to the point of malpraxis or criminality. And if one asks what is meant by "immediate operation," the reply is operation "as soon as it is well nigh certain that the appendix is inflamed." Mr. Owen is saying nothing new, but the thing has never been said before with such definiteness and solemnity. Nothing brings so much discredit upon the profession as paltering with a condition whose treatment is agreed upon by all intelligent physicians.

Failure to operate at the moment a diagnosis is made is a sign of incapacity or ignorance on the part of the attendant. The book is dedicated simply, and properly, to Sir Frederick Treves, who did so much for surgery of the appendix some twenty-five years ago when the importance of it was just beginning to be understood.

ON DREAMS. By PROFESSOR DR. SIGM. FREUD. Translated by M. D. EDER with introduction by W. LESLIE MACKENZIE, M.A., M.D., LL.D. Price, \$1.00. London: William Heinemann. New York: Rebman Company, Limited. Toronto: McAlinsh & Company, Limited, 1914.

Freud's theory is that dreams are of the same tissue as other phenomena that are undoubtedly morbid. He takes the view that no conscious experience is entirely lost; what seems to have vanished from the current consciousness has really passed into a sub-consciousness where it lives on. His method of psycho-analysis is now quite familiar; in the present book he applies it to the interpretation of dreams and endeavours to prove that they are a manifestation of ordered mental experience. His theory of dreams is that they are very largely the expression of unfulfilled desire. In children the sleeping experience takes the form of the ungratified desires of the day; but as the mind grows older the dream expression becomes more intricate. These salient features are drawn from the singularly clear introduction which is written by Dr. W. Leslie MacKenzie, and it is so stimulating that one continues the reading of the book with avidity. Dreams form an important part of life, and it would be quite wonderful if at last they could be interpreted upon an intelligible principle.

PROGRESSIVE MEDICINE. Edited by HOBART AMORY HARE, M.D., assisted by LEIGHTON F. APPLEMAN, M.D. Volume XVI, No. 3. Price, \$6.00 per annum. Philadelphia and New York: Lea & Febiger.

"Progressive Medicine" still holds its place as a record of "advances, discoveries, and improvements in the medical and surgical sciences." In the present number the most important article is that by William Ewart, in which he treats of the diseases of the thorax and its viscera, including the heart, lungs, and blood-vessels, a comprehensive subject treated in a comprehensive way. Dermatology and syphilis is considered by William S. Gobbheil, obstetrics by Edward P. Davis, and diseases of the nervous system by William G. Spiller.

A MANUAL OF DISEASES OF THE NOSE AND THROAT. By CORNELIUS G. COAKLEY, A.M., M.D. Fifth edition, revised and enlarged; illustrated with 139 engravings and 7 coloured plates. New York and Philadelphia: Lea & Febiger, 1914.

It is easy to understand why this book has so quickly been published in five editions. The author has done exactly what he set out to do, namely, "to provide a compact manual answering the needs of both students and practitioners. For these abundant instruction in examinations, diagnosis, and treatment is the thing; and Dr. Coakley has supplied just that.

A TREATISE ON DISEASES OF THE RECTUM AND ANUS. Edited by A. B. COOKE, A.M., M.D. and others. Illustrated. Price, \$5.50 net. Philadelphia: F. A. Davis, 1914.

The illustrations in this book are beautiful enough to be framed and hung in a drawing-room. Many of them are quite new, and the book is entirely so. We quite agree with the author that the volume contains the most authoritative teaching upon the subject, and that the various contributors are in essential agreement upon all important points. The author himself contributes the first sixteen chapters. Dr. Cooke writes from Los Angeles, and began the work as far back as the year 1895. During several years he was obliged to leave it at one side, and the responsibility for taking it up anew is laid upon the publishers. This is a responsibility which they may assume with the greatest of cheerfulness. If publishers had no heavier burden in their consciences and ledgers, they would be a happy lot of men.

A HANDBOOK OF PSYCHOLOGY AND MENTAL DISEASE FOR USE IN TRAINING SCHOOLS FOR ATTENDANTS AND NURSES AND IN MEDICAL CLASSES, AND AS A READY REFERENCE FOR THE PRACTITIONER. By C. B. BURR, M.D. Fourth edition, revised and enlarged; with illustrations. Price, \$1.50 net. Philadelphia: F. A. Davis Company, 1914.

The superscription of this book describes its purpose, and it only remains to be said that it adequately meets the need for which it is designed. It is only fair to add that the book is too modestly described. It is more than a means of reference for practitioners. It can be read in its entirety with pleasure and profit. Indeed the studies on symbolism in sanity and in insanity, on certain hysterical

states, based upon Freud's researches, are profound and illuminating.

THE CLINICS OF JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago. Volume III, No. III. Octavo of 215 pages, 54 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Published bi-monthly. Price, per year: paper, \$8.00; cloth, \$12.00. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

GENTLEMAN: "What's the matter with him?"

THE CLASS: "He's all right."

These are the opening sentences in "The Clinics of John B. Murphy," for June, 1914. Dr. Murphy as a surgeon is "all right." As a writer of "clinics" to be read—one may demur.

A CLINICAL STUDY OF THE SEROUS AND PURULENT DISEASES OF THE LABYRINTH. By DR. ERICH RUTTIN. Authorized translation by HORACE NEWHART, M.D. Illustrated. Price, \$2.00 net. New York: Rebman Company, 1914.

We do not share the hope of the eminent Professor Dr. Victor Urbantschitsch, who writes the preface to this book, that it will be entirely comprehensible to the non-specialist, but its value to the specialist is undoubted. To the Vienna school much is owing, and this work increases the obligation. The subject is important on its own account, and more so from the liability of an extension of inflammation from the labyrinth to the brain. The case reports, somewhat abbreviated from the original, are very instructive.

PRACTICAL HORMONE THERAPY. A MANUAL OF ORGANOTHERAPY FOR GENERAL PRACTITIONERS. By HENRY R. HARROWER, M.D., with foreword by PROFESSOR DR. ARTUR BIEDL, Vienna. Price, 15s. net. London: Baillière, Tindall and Cox, 1914.

A writer who has something new to present does not win favour by deriding medical scepticism. If in one instance the profession was wrong, in ninety-nine it has been right in maintaining such an attitude. "We all remember," says Dr. Harrower, "the storm of hilarious incredulity with which the first announcement of Roentgen's discovery was received." We remember nothing of the kind, and nothing of the kind occurred; but even if it did, we shall not swallow the hormone therapy or any other apart from its merit

with greater avidity. The introduction is the least attractive part of the book. Indeed, the book itself is extremely interesting, and brings together a vast amount of literature upon a new and complicated subject. The name itself is open to objection as the author admits, but no other has been found to indicate the "therapeutics of the ductless glands and internal secretions." We cannot agree that the use of "hormones in general practice is *terra incognita* to the majority of medical men" in this country at least. Dr. Harrower has brought to his task a great enthusiasm, and has spent an incredible amount of labour upon the literature of the subject. No book so complete upon the subject has appeared in English.

A TEXT-BOOK OF GENERAL BACTERIOLOGY. By EDWIN O. JORDAN, Ph.D., professor of bacteriology in the University of Chicago and in Rush Medical College. Fourth edition thoroughly revised. Octavo of 647 pages, fully illustrated. Cloth, \$3.00 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Toronto.

Dr. Jordan is quite right. The study of bacteriology should find a place in every scientific course, and should not be confined to the medical faculty alone. We would go farther, and give it a place in the academic course as well. No man can successfully pretend to be educated, who is ignorant of this branch of science. It enters into life at every point, and has profoundly modified philosophic conceptions. For this purpose no better text-book could be desired. It has gone into the fourth edition, and that in itself is evidence of its value.

DISEASES OF THE RECTUM AND COLON AND THEIR SURGICAL TREATMENT. By JEROME M. LYNCH, M.D., professor of rectal and intestinal surgery, New York Polyclinic. Octavo, 583 pages, with 228 engravings and 9 coloured plates. Cloth, \$5.00 net. Lea & Febiger, Philadelphia and New York, 1914.

It is a singular phenomenon that the books which deal with uncleanly organs are in themselves the most sumptuous and beautiful. The present volume is no exception. It is done in Messrs. Lea & Febiger's best style of printing, binding, and illustration; and surgeons who practise this specialty will find much of interest in its pages. The entire field has been covered, and the operator

is amply warned in advance of the difficulties which he is likely to encounter—difficulties which, of course, can only be dealt with by his own resourcefulness. Details are not overlooked. Indeed, there are very full directions for the preparation of the patient, the after treatment, and for dealing with complications.

THE SENSORY AND MOTOR DISORDERS OF THE HEART. By ALEXANDER MORISON, M.D., F.R.C.P., senior physician to the Great Northern Central Hospital; physician in charge of heart cases to the Mount Vernon Hospital, London. Two hundred and sixty-one pages, with illustrations. Price, \$2.50. Toronto: McAinsh & Company, Limited.

The English school has taken the heart for its own. As a result of their labours the opinion of the sensory and motor disorders which affect that organ has entirely changed, and the treatment of them has been much modified. Since the remarkable studies of James Mackenzie were published the whole medical profession has approached heart problems with fresh interest. Dr. Morison is following a sound tradition which the English school has made its own, and by his various writings he has done his share in perpetuating it. The results of his investigations are contained in this book. It is a brilliant achievement.

STAMMERING AND COGNATE DEFECTS OF SPEECH. By C. S. BLUEMEL. Volumes I and II. New York: G. E. Stechert & Company, 1913.

The condition known as stammering is at length receiving the attention it deserves at the hands of physicians. This change for the better is largely due to the persistent efforts of Dr. Makurn, of Philadelphia, who has brought his theories on the subject to the test of experience, and demonstrated by success that his theory and practice were sound. This book in two volumes by C. S. Bluemel is the most ambitious work on the subject, which has yet come under our notice, and it investigates in detail all the systems which have been devised for the remedy of this troublesome defect. Any individual system is, as the author points out, usually an arbitrary and adventitious thing. He has accomplished the desire of Schulthess, expressed nearly a century ago, that some one would embody in a single book all known systems applicable to the treatment of stammering.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

GUIDING PRINCIPLES IN SURGICAL PRACTICE. By FREDERICK EMIL NEEF, B.S., M.L., M.D. Price, \$1.50. New York: Surgery Publishing Company, 1914.

DISEASES OF BONES AND JOINTS. By LEONARD W. ELY, M.D. Illustrated. Price, \$2.00. New York: Surgery Publishing Company, 1914.

DISEASES OF THE RECTUM AND ANUS. A PRACTICAL HANDBOOK. By P. LOCKHART-MUMMERY, F.R.C.S. London: Baillière, Tindall and Cox, 1914.

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DISEASES OF THE SKIN, INCLUDING THE ACUTE ERUPTIVE FEVERS. By FRANK CROZER KNOWLES, M.D. Price, \$4.00 net. Philadelphia and New York: Lea & Febiger, 1914.

Men and Books

BY SIR WILLIAM OSLER, BART., F.R.S.

XXV. "LOOKING BACK"—1889.*—That those of us in control of departments at its opening should have been spared to see this twenty-fifth anniversary of the hospital is a piece of singular good fortune. It is a small matter that I am not with you—

Where the greater malady is fixed

The lesser is scarce felt—

expresses my feeling in the present crisis. You all know how I would have enjoyed the reunion with so many so dear to me by the strongest ties that bind man to man—the same ideals in life, the same pride in a splendid heritage, and that sense of close comradeship enjoyed by men who have initiated a great work and have survived to see it successful beyond their wildest dreams.

The Johns Hopkins foundations were only grafts on the educational tree, grafts that would have withered had they not partaken of the root and fatness—to use a Biblical phrase—of its natural branches. Great biologists before Martin, great physicists before Rowland, great chemists before Remsen, great Grecians before Gildersleeve had had their day in America. It was not the men, though success could not have come without them, so much as the method, the organization, and a collective new outlook on old problems. They were gathered here from all parts to do one thing, to show that the primary function of a university was to contribute to the general sum of human knowledge. On the way they could teach and they had to teach what the fathers had taught, but this was only a means to a definite end, viz., in science and in arts to widen man's outlook so as to strengthen his dominion over the forces of nature. Individuals here and there for generations had had in this country these ideals, but never before a *studium generale*, a whole body of men gathered in one place to form a university. That part of the university which, with the hospital, forms the medical school has only had twenty-five years of existence, not a generation, a mere fraction of time in the long history of the growth of science, so that it seems presumptuous to claim any powerful influence on the profession at large. The feeling, however, is

* Remarks read for Professor Osler at the Johns Hopkins Celebration, 1914.

strong, too strong to be passed over, that the year 1889 did mean something in the history of medicine in this country. One thing certainly it meant, as originally designed by that great leader, Daniel C. Gilman, that the ideals of the men on this side of Jones Falls were to be the same as those of the men in the laboratories of North Howard Street, that a type of medical school was to be created new to this country in which teacher and student alike should be in the fighting line. That is lesson number one of our first quarter-century, judged by which we stand or fall. And lesson number two was the demonstration that the student of medicine has his place in the hospital as part of its machinery just as much as he has in the anatomical laboratory, and that to combine successfully in his education practice with science, the academic freedom of the university must be transplanted to the hospital. Again, it was not men, but a method, initiated in Holland, developed in Edinburgh, matured in London, and long struggled for here, but never attained until the Johns Hopkins Medical School was started.

And binding us all together there came as a sweet influence the spirit of the place; whence we knew not, but teacher and taught alike felt the presence and subtle domination. Comradeship, sympathy one with another, devotion to work, were its fruits, and its guidance drove from each heart hatred and malice and all uncharitableness.

Looking back, these are my impressions of the work of the Johns Hopkins Hospital.

But I must touch a personal note, and pay a tribute of affection to the men who helped to make my special clinic. In those early days of happy memories Booker and Harry Thomas in the dispensary sowed the good seed which has thriven so wonderfully in great new departments. Lafleur, Reese, Toulmin, Scott, Thayer, Hewetson, Simon, Hoch, Frank Smith and Barker helped to organize in those plastic first years our methods of work. No one feature contributed more to the development of the hospital than the presence in each department of a group of senior assistants. I look with a justifiable pride at the work of these men. In succession during my term, Lafleur, Thayer, Fletcher, McCrae, Emerson controlled the work and my indebtedness to them cannot be expressed in words. Always loyal and considerate, no chief ever had more devoted helpers. And we were singularly fortunate in our assistants, senior and junior. The list is too long to tell over. Many came from outside schools, but the spirit of the place soon came upon them. Scattered far and wide now in important posts

they know how my heart follows their work, and how proud I am of their success. To have more than thirty of one's "boys" actively engaged in teaching is to draw a big prize in the lottery of life, with which for solid satisfaction there is nothing to compare.

But shadows flit across the picture—dark memories of the men whose leaves perished in the green. Jack Hewetson we all loved, I as a son, Thayer and Barker and Frank Smith as a brother. There was a light in his blue-grey eyes that kindled affection in all who knew him. Meredith Reese, the first to go, stricken also with tuberculosis, left us with scarred hearts. Livengood, whose mental outfit promised a career of special brilliancy, met a tragic death in the Bourgogne. Lazear, who went from the clinical laboratory to join Walter Read, died a martyr's death in Cuba. Oppenheimer and Ochsner, men of great merit, died on duty in the hospital. John Bruce MacCallum, in intellect "the bright particular" among our students, lived long enough to snatch something from dull oblivion. Al. Scott, whom we all loved dearly, had a successful career in Philadelphia before the call came. And only recently we have to mourn two of our best—Rupert Norton was one of the finer spirits, only touched to fine issues in a suitable environment, and that he found here in the latter years of his all-too brief life; Otto Ramsay, who came to our clinic first, became one of the most successful teachers and practitioners in New England.

The Johns Hopkins Hospital illustrates the growth of an idea, represented by the founder, and the intelligent coöperation of different units. The foundation stones were laid by the adviser, John S. Billings, by Francis T. King, the president, and by the Board of Trustees. Under the wise guidance at first of President Gilman, then for long years of Dr. Hurd, the organization grew apace, and the hospital was made a fit habitation for patients by the work of Miss Isabel Hampton, Miss Rachel Bonner, and Mr. Emery. The medical staff has used the facilities thus afforded for the benefit of the public, in curing the sick, in studying the nature of disease, and in training men to do the same, with what measure of success we must leave to the judgement of posterity. To me at any rate there remains a precious memory of the years I spent at Baltimore, and an enduring pride that I should have been associated with the work of this hospital.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

CONTINUOUS IRRIGATION OF BLADDER AND PELVIS OF KIDNEY.

By DR. E. HOLZBACH of Tübingen University. *Muenchener Medizinische Wochenschrift*, No. 21, 1914..

"There is a certain percentage of cases of post-operative cystitis that apparently cannot be avoided. Spontaneous micturition is often not possible in spite of all one can do, and catheterization of a non-functionating bladder, if continued for several days, is liable to end in cystitis. Even without catheterization the infrequently emptied bladder is prone to infection. These cases of stagnation cystitis which, according to our experience, are most obstinate are very apt to be followed by an ascending infection, pyelitis, paraureteritis, and so forth. If the cystitis has passed its acute stage without showing signs of improvement under the usual treatment of warmth, rest, much fluids and urotropin, one must consider local treatment, of which the best form is bladder irrigation. Now to irrigate a bladder several times a day is most unpleasant to both doctor and patient as well as being dangerous to the latter. To avoid this we employ continuous irrigation through a retention catheter. A double or two-way catheter is used with the inflow tube double the calibre of the other, and this is attached to an irrigator containing a 2 per cent. boracic solution. By reason of the narrow outlet tube the bladder is always kept distended and the folds obliterated, and the fluid may be maintained at a uniform temperature by using a thermos flask as an irrigator. The treatment may be continued from ten to fourteen days. For pyelitis a two-way ureteral catheter is introduced high up in the ureter of the affected kidney and continuous irrigation employed."

TESTING THE KIDNEY FUNCTION WITH CREATININ. From the Clinic of Professor Mueller of Munich. *Muenchener Medizinische Wochenschrift*, No. 16, 1914.

"The means of testing the functional capabilities of the kidney were originally almost wholly confined to the diagnosis of those

unilateral affections which occur in the realms of surgery. Now, however, we are beginning to realize that these tests are applicable to the field of internal medicine. The principle of the diagnosis of functional ability of the kidney is well known. One gives the patient certain substances which can later be demonstrated in the urine, and observes how quickly and in what quantity they are excreted. The substances commonly in use for this purpose are of two classes. (1) Substances which under the usual conditions of life are not found in the urine, that is which are foreign to the body. (2) Constituents of normal urine. Those of the first group, foreign bodies such as dyes, salicylic acid, milk sugar, and so forth, have the advantage that they are easily demonstrated in the urine, and also that it is not necessary to diet the patient during the test; but they also have disadvantages, the chief of which being the fact that the kidneys of different individuals exhibit different capabilities regarding the excretion of the same foreign body. On the other hand if one uses a normal urinary constituent one can ascertain the behaviour of the kidney with regard to one of its daily exercises. A functional test with one particular substance would not be sufficient, of course, to determine the organ's complete functional capacity, which is not to be considered as a single function but a series of separate functional capacities for different substances such as water, salts, urea, uric acid, creatinin, and others. It has been repeatedly shown that one or more of these excretory processes may be deranged without much affecting the others. Witness for example cases where the sodium chloride output is normal while the nitrogen-containing bodies are suppressed. In practice it is impossible to make a complete estimation of the different excretory capacities; nevertheless one must not on this account abandon the tests, but estimate the functional capacity of the kidney for some substance which is easy to demonstrate and which is least altered by the changes in the kidney. In our opinion the substance of choice is creatinin. The amount of creatinin in the urine of healthy individuals varies from .8 to 2.4 gm. It is only slightly dependent upon the kind of food taken, and only in the event of excessive ingestion of meat is the creatinin output slightly increased. For this reason the employment of a uniform diet is not necessary during the test. A further advantage is that the test is simple, consumes but little time, and can be made with small quantities of urine. We perform the test as follows. The urine must be collected for three consecutive days as will be described. The diet is as usual except that large amounts of meat

and fluids must be avoided. At nine o'clock in the morning of the first day of the experiment the bladder is emptied. The urine for the next twenty-four hours is collected, mixed and measured, and the creatinin content estimated. Divide this by four to get the average six-hour output. At nine o'clock in the morning of the second day the patient is given 1.5 gm. creatinin dissolved in sweetened water to the amount of about 100 cc. The urine is then collected in six-hour periods for twenty-four hours. At the conclusion of each period the bladder must be emptied. If there is some special objection to waking the patient in the night the third and fourth periods may be taken as one. The creatinin content of each period is then estimated. By comparing the results of examination of the second day periods with those of the first day the eliminative capability for creatinin can be ascertained. It is not strictly necessary to carry the examinations over the third day but it gives one a better control. In healthy individuals one finds in the first six-hour period of the second day a marked increase in the creatinin output as compared with the average period of the first day: as a rule an increase of as much as .9 to 1.2 gm., corresponding to 60 to 90 per cent. of the ingested creatinin. In the second period there should be 8 to 30 per cent. excreted, and in the third period the amount should nearly correspond with that of the average six-hour period of the previous day. In the case of diseased kidneys the creatinin content during the first period of the second day shows only a slight increase, perhaps .3 gm. over that of the average period. The remaining creatinin may not be eliminated until the third day. Examination of patients with a high blood pressure but no signs of nephritis have in some cases shown a deviation from the normal, and the same is sometimes true of gout. Congestion of the kidneys also alters the creatinin content. In the case of unilateral diseases of the kidneys there is no alteration in the findings because the healthy kidney does the work of the diseased one. I had the opportunity of testing a case where one kidney had been removed because of an injury and found no deviation from the normal creatinin content. Of course if one can catheterize the ureters the test is extremely useful in these cases. The test may also be applied to the blood to determine the creatinin content as an index to the functional ability of the kidneys."

G. C. HALE.

London, Ont.

Obituary

DR. L. S. POULIN, of St. Alexandre, Quebec, died September 26th, in the seventy-first year of his age.

DR. A. W. BELL, of Winnipeg, died suddenly on October 7th. Dr. Bell was born at Markham, Ontario, August 18th, 1862. He took his medical degree at Trinity College, Toronto, in 1891. For some years Dr. Bell was assistant manager of the Toronto Industrial Exhibition and, in 1906, was appointed general manager of the Winnipeg Exhibition.

DR. J. I. WILEY, of Dresden, Ontario, died October 4th. Dr. Wiley, who was about fifty years of age, had been suffering from Bright's disease for some time. He was a well-known practitioner in Kent county and a few years ago was mayor of Dresden. He leaves a widow, two sons, and one daughter.

DR. A. L. W. WEBB, of Brighton, Ontario, died last September. Death was due to poisoning, Dr. Webb having accidentally taken some toadstools under the impression that they were mushrooms. Dr. Webb was the second son of Major A. C. Webb and was thirty-five years of age. He was a graduate of the University of Toronto and of the Ontario Medical College, and had been in practice in Brighton for about seven years. He was president of the Trent Valley Medical Association and was medical officer of health for the township and village of Brighton.

DR. DINGLE, of Oakville, Ontario, died September 18th, following an operation for appendicitis. Dr. Dingle was in the forty-second year of his age and had been in Canada only a few months. He graduated with honours from King's College, London, and before coming to Canada held the position of house surgeon in King's College Hospital. Dr. Dingle served as surgeon captain in the divisional hospital at Sydenham and at Bloemfontein during the Boer war. He leaves a widow and one son, three years old.

DR. GEORGE MITCHELL, of Wallaceburg, Ontario, died Octo-

ber 2nd, at the age of seventy-eight years. Dr. Mitchell was born in Watford and graduated from Bellevue Hospital in 1865. He went into practice at Wyoming and, in 1866, moved to Wallaceburg. Dr. Mitchell was ex-warden of Kent county and always took an active part in municipal affairs. He leaves a widow, one daughter, and two sons.

DR. JOSEPH A. CHARETTE, of Montreal, died September 18th, from injuries received when motoring; the car ran into a fence, turned turtle and Dr. Charette was crushed beneath it. Dr. Charette was forty-eight years of age. He leaves a widow and one son.

DR. M. R. MCGARRY died at Harbor View Hospital, North Sydney, on Wednesday, September 23rd, in the thirty-fifth year of his age. Dr. McGarry was born at Margaree and was a graduate of Dalhousie University. He had been practising as a surgeon at Florence for the past five years.

DR. JOHN R. RUTHERFORD, of Aurora, Ontario, died of pneumonia, September 24th, in the seventy-fifth year of his age. Dr. Rutherford had practised at Aurora for thirty-five years. He leaves a widow, two sons, and one daughter.

DR. J. M. SHAW, of Landsdown Village, Ontario, died suddenly September 23rd. Dr. Shaw was a graduate of Queen's University and was well known throughout Leeds county.

DR. JOHN HENRY BELL died suddenly in Liverpool, England, last September. Dr. Bell, who was surgeon on the White Star steamer *Adriatic*, was a graduate of McGill University and had practised for several years in Montreal. He was a brother of the late Dr. James Bell of Montreal.

DR. L. W. THOMPSON, who has been medical officer of health for Listowel and Wallace for the past twenty-one years, died from pneumonia on Sunday, September 14th. Dr. Thompson was in the sixty-first year of his age and had practised in Listowel since 1886. He leaves a widow, three daughters, and one son.

DR. STEPHEN GILLIS, of St. Louis, Prince Edward Island, died of typhoid fever at the Charlottetown Hospital on Wednesday,

September 16th. Dr. Gillis was twenty-nine years of age. He graduated from McGill University in 1910. He was a successful and popular physician and his untimely death is much regretted. He leaves a widow.

DR. MICHAEL R. MCGARRY died at Harbour View Hospital, North Sydney, Nova Scotia, on Wednesday, October 7th, in the thirty-fifth year of his age. Dr. McGarry was born at Northwest Margaree in 1880. After taking his B.A. degree at St. Francis Xavier College, Antigonish, he entered Dalhousie University where he graduated in medicine. He spent a year at the Victoria General Hospital, Halifax, and about five years ago went into practice at Florence.

News

MARITIME PROVINCES

THE department of public health of Nova Scotia recently issued a bulletin directing attention to the means by which typhoid fever is spread and emphasizing the necessity for taking precautions against the disease, especially at this season of the year. A leaflet containing instructions to those who have to nurse typhoid patients has also been published by the department and may be obtained free of charge from any medical health officer in the province, or from the provincial medical health officer at Halifax.

A CONTRIBUTION of \$1,000 has been made by the Ladies' Aid towards the \$8,000 to complete the proposed extension to the nurses' home of the Moncton General Hospital.

THE plans are being prepared for a hospital at Miramichi, New Brunswick. It is proposed to expend about \$30,000 on the building which, it is hoped, will be commenced early next spring.

At a recent meeting in the Teachers' Institute at Chatham, New Brunswick, it was resolved that "In the opinion of this Institute it is desirable that the board of education enact a regulation making compulsory the medical inspection of all school buildings and pupils." As yet there is no medical inspection of schools in the province of New Brunswick.

ONTARIO

A HOSPITAL is to be built at Timmins by the Hollinger Gold Mines Company. There is already a small hospital there but more accommodation is needed. The new building will contain thirty beds. Patients from the town and neighbouring mines will be admitted but the hospital is intended for men from the mines controlled by the Canadian Mining and Finance Company.

THE new wing of the Galt Hospital was formally opened on Friday, September 18th.

DIPHTHERIA has been prevalent in Ottawa during the past few months. During August 68 cases were reported.

SEVERAL cases of smallpox have occurred at Arva and at Proudfoot's Lane in the township of London.

A. T. COLVILLE, of Hamilton, was fined fifty dollars and costs on October 1st, for practising medicine at Mitchell under false pretences, as he is not a registered physician.

At a meeting of the Hamilton Hospital board on September 29th, it was decided that the hospital staff should be increased to twelve and the by-law was amended accordingly. During the month of August 403 patients were in residence.

DR. GORDON RICE has been appointed to the position of divisional surgeon for the Ontario lines of the Grand Trunk Railway, in succession to the late Dr. Bruce L. Riordan.

It is expected that the new wing of the St. Joseph's Hospital at London will be completed by next April.

DR. EDWARD WORTHINGTON, surgeon to H.R.H. the Duke of Connaught, left for England on Friday, October 9th, on his way to the front.

ARRANGEMENTS are being made to establish a maternity ward at the Owen Sound Hospital.

DIPHTHERIA is reported to be prevalent among the school

children at London and at St. Thomas. However, it has not been thought necessary to close the schools.

THE annual meeting of the McKellar General Hospital at Fort William was held October 9th. During the past year 1,902 patients were treated in the hospital, 122 births and 119 deaths occurred; the surgical operations numbered 705. The hospital is being enlarged and, in consequence of the building operations, it has been impossible to use the private wards or the obstetrical department during the last three months.

QUEBEC

It is announced that the French government has agreed to contribute \$15,000 a year to the proposed hospital at Maisonneuve. It is the intention that the Mont de la Salle, the present parent house of the Christian Brothers, shall be converted into a hospital for French citizens from Montreal, Maisonneuve, and the surrounding district. No decision has as yet been made as to when the hospital will be opened.

It is proposed to open free milk depots, with dispensary, in Montreal. In connexion with the depots, a department of dental surgery will be established where school children will be able to obtain treatment free of charge.

THE municipalities of the province are contributing towards the maintenance of a hospital which has been established, and equipped, in the Rue de la Chaise, Paris. The hospital bears the military number 47 and it is hoped that a sum sufficient to maintain it for five months will be subscribed. On this basis, each municipality is asked to contribute 750 francs, as each bed will cost five francs a day. It is proposed that each bed shall bear the name of the parish which contributed towards its maintenance. The provincial government has contributed \$10,000 towards the fund and it is intended that the money shall be used to maintain a ward containing seventy beds, which shall be named the Provincial Government of Quebec Ward.

THE dedication of the new hospital at Sherbrooke took place on the afternoon of October 9th. The hospital has been established at a cost of \$88,229. Dr. Bayne has been appointed house surgeon.

ALBERTA

Dr. FOLLINSBEE, of Edmonton, has been appointed resident house physician to the Great Ormonde Street Hospital for Sick Children. Dr. Follinsbee recently took a post-graduate course in London. Many vacancies have occurred on the staffs of the London hospitals, as so many of the resident physicians have left for the front.

Dr. JAMES FYSCHÉ, superintendent of the Edmonton General Hospital, accompanied the first contingent of the Canadian Expeditionary Force as captain of No. 1 general hospital.

THE following communicable diseases were reported in Calgary during the month of September. Diphtheria, 10 cases; scarlet fever, 23 cases; typhoid fever, 38 cases; measles, 4 cases; chicken-pox, 11 cases; erysipelas, 1 case; mumps, 5 cases; tuberculosis, 4 cases; anterior polio-myelitis, 2 cases. The total death rate from all causes per 1,000 of population was 9.3.

THE hospital by-law for \$10,000, which was submitted to the ratepayers of Wainwright, was defeated by a large majority.

THE annual meeting of the council of the College of Physicians and Surgeons of the province of Alberta was held September 21st. Among those present were Drs. Field, Malcolmson, R. G. Brett, John Park, F. W. Crang, F. H. Mewburn, E. G. Mason, and G. Macdonald. Approval was given to a vote of \$500 to the Academy of Medicine, of Edmonton, as this society has established a medical library in Edmonton, and has incurred an expenditure of \$700. The officers of the council for the year 1914-1915 are: president, Dr. G. H. Malcolmson; vice-president, Dr. E. G. Mason.

SASKATCHEWAN

It is reported that an epidemic of typhoid has broken out in Swift Current. It appears there has been a good deal of negligence in the matter of reporting cases of the disease.

Dr. B. L. WICKWARE has resigned from the position of Superintendent of the Moose Jaw General Hospital, which he has held for the past two years.

RATHER more than a year ago the Department of Indian Affairs decided to build a school and hospital on Fisher Island, about six miles from Le Pas. The island is occupied by Cree Indians and is situated on the Saskatchewan River. The formal opening of these buildings took place on Thursday, October 1st. The hospital will be in charge of Miss Jenner, of Chatham, Ontario, under the direction of Dr. R. D. Orok.

THE Saskatoon city health department has commenced a publicity campaign with the object of educating the public in the conservation of health. Each day a bulletin, treating of some question relating to sanitation and health, is issued and is posted in the street cars so that it may be brought to the notice of the public.

THE list of diseases, of the presence of which notice must be given to the medical officer of health, has been increased to include erysipelas, puerperal fever, and ophthalmia neonatorum.

PLANS have been prepared by the Commissioner of Public Health, to show the most suitable construction for a small hospital of about ten beds, which could be established at a cost of \$6,000. The plans will be forwarded to any municipality or official desiring the same, upon application to the Commissioner.

BRITISH COLUMBIA

A HOSPITAL was opened recently at Summerland. The site was given by the Summerland Developing Company and the building will accommodate from thirty to thirty-five patients.

MEDICAL COLLEGES

Alberta University.

EIGHTEEN students have registered in the first year of the faculty of medicine at the University of Alberta. It will be remembered that this course was given for the first time last year. This session the second year's work and a new course in pharmacy are offered for the first time.

A meeting of the staff and student body was held on Thursday, October 1st, and it was decided to organize a military unit and to form a contingent of the Officer's Training Corps.

Dr. Allan C. Rankin, bacteriologist for the province of Alberta,

and professor of bacteriology in the university, accompanied the first contingent of the Canadian Expeditionary Force.

Dalhousie University.

THE number of first year medical students who have registered at Dalhousie this session is thirty-four, inclusive of dental students. As yet no one has been appointed to the Chair of Pathology.

McGill University

THE opening of another session in the McGill Faculty of Medicine has resulted in the enrolment of one hundred and ten freshmen. The students in the other years are all back with the exception of some half a dozen who have gone to the front. The annual sessional lecture in medicine was given on Monday, October 5th. The proceedings were opened by Dr. Birkett, the new dean of the faculty. The subject of the lecture, which was given by Dr. Thomas Lewis, of London, was "Syncope of cardiac origin." The annual university lecture was delivered by Professor G. R. Mines, who has been appointed to the Joseph Morley Drake Chair of Physiology. Professor Mines is an M.A. of Cambridge University, and before coming to McGill he worked under Dr. T. G. Brodie, professor of physiology in the University of Toronto. Professor Mines spoke on "Science and individuality."

The Graduate's Society of McGill University has issued a statement which reviews the causes that led up to the present war, the conditions which the war has created, and the measures by which McGill men can give assistance,—by financial aid, by public speaking, or by volunteering to go to the front. A McGill regiment has been formed in order to give the men of the university, and in some cases their relatives and friends, an opportunity of fitting themselves to defend their country and of gaining a knowledge of military tactics. It is not intended that the regiment shall volunteer for active service as a whole, but it is expected that many of those now under training will go to the front, probably in companies composed of Canadian university men. It is hoped that it will be possible to train and equip one thousand men and for this purpose the Graduates' Society expects to raise \$50,000. Every consideration in the way of fees and time allowance will be given to those students who go to the war and, in the case of medical students, clinical experience gained in the hospitals at the front will be counted as part of their training. Similar arrangements have been made by the Quebec College of Physicians and Surgeons.

Keen regret was felt throughout the university when it became known that Dr. A. Campbell Geddes, professor of anatomy and commander and organizer of the McGill battalion, was to leave for England to take up his duties at a recruiting station at Hull. Before leaving, Dr. Geddes was presented with a travelling bag by the class of '18 as a mark of their esteem.

At a meeting of Corporation, which took place October 21st, approval was given to an offer made by the faculty of medicine to furnish the staff for a general hospital for service at the front.

Queen's University.

THE registration of medical students at Queen's University is about the same as last year. There are seventy-six in the first year class. Dr. A. H. Lothrop, formerly of Columbia University, has been appointed professor of biological chemistry. He will supervise all the chemical classes for medical students. During the summer applications were invited for appointments as assistant professors in physiology and in bacteriology and public health. Owing to the war, however, these appointments have been deferred.

Dr. A. E. Ross, M.P.P., professor of medical jurisprudence, has gone overseas with the first contingent, in charge of the first ambulance corps. A number of medical students are with Dr. Ross, among them Kenneth, son of Dr. Mundell, professor of surgery. Dr. Ross was with the Canadians in the South African campaign. In association with the general military activity of the students an ambulance corps has been organized among the medical students under the management of Surgeon Major Etherington and Dr. W. T. Connell. Dr. W. G. Anglin and Dr. E. Ryan have volunteered as civil surgeons for work at a base hospital.

At the recent convocation the honorary degree of LL.D. was conferred upon Dr. R. S. Thornton, of Deloraine, Manitoba, president of the Medical Council of Canada, in recognition of his services in the establishment and organization of the Council, and to mark the nationalization of the medical profession. Dr. Thornton addressed the students upon the advantages attached to securing the Licentiate of the Canada Medical Council.

The following degrees were recently granted by the Medical College of Queen's University: Degree of M.B., F. W. Burden, St. John's, Newfoundland; J. M. Laframboise, Ottawa. Degree of M.D. and C.M., W. S. T. Connell, Kingston; A. G. Kane, Kingston; C. C. Ligoure, Port of Spain, Trinidad; J. W. Saunders, Georgetown, British Guiana.

University of Toronto.

With great regret the University of Toronto has accepted the resignation of Dr. J. B. Leathes, professor of pathological chemistry, who has been appointed to the Chair of Physiology in Sheffield University. He will remain in Toronto until Christmas. His successor has not yet been appointed.

The military fever is at white heat in the university, and it is expected that practically every medical student will join the Officer's Training Corps. It begins to look as if the university as a whole will easily have more than two thousand students drilling three afternoons in the week. All laboratories are closed promptly at four and professors are rivalling their classes in military ardor. President Falconer addressed the student body as a whole on Tuesday, October 20th, with the result that, so some of the "medicals" expressed it, "no self-respecting student could fail to join the recruits."

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canadian Practitioner and Review, Oacotber, 1914:

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| How Toronto controls her milk supply | H. Lloyd. |
| Chemical explanations of uræmia | J. B. Leathes. |

Dominion Medical Monthly, October, 1914:

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| The use and abuse of the obstetric forceps | B. P. Watson. |
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The Western Medical News, September, 1914:

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| The acute abdomen | J. M. Elder. |
| Report of a spontaneous rupture four and
one-half to five months gravid bi-
cornate uterus. Operation followed
by conception of the other horn | G. A. Wright. |

The Canadian Journal of Medicine and Surgery, September, 1914:

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| St. John's Meeting, Canadian Medical
Association | J. Hunter. |
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The Canadian Journal of Medicine and Surgery, October, 1914:

The modern warfare against tuberculosis as a disease of the masses . . .	S. A. Knopf.
The clinical congress of Surgeons of North America, London, England . . .	J. Hunter.

L'Union Médicale du Canada, October, 1914:

Le traitement du rhumatisme chronique par l'extrait de glande thyroïde, avec observations	A. LeSage.
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The Public Health Journal, October, 1914:

Public health and the general practitioner	T. H. Whitelaw.
The use of rebipelagar in water and milk examination	J. Race.
Standards with reference to sewage treat- ment	T. Aird Murray.
Some difficulties of medical officers of health in towns and rural communi- ties	T. W. Vardon.
Conservation of child life	J. J. Kelso.
Sanitation of a military camp	F. L. Vaux.
Valcartier: An impression	G. D. Porter.
Contagious abortion in dairy cows and the presence of the bacillus in the milk	C. Evans.
Collection and disposal of refuse	F. J. Johnson.

ESSEX COUNTY MEDICAL SOCIETY

THE following are the officers of the Essex County Medical Society elected for the year 1914-1915: honorary president, Dr. James Samson; president, Dr. James Gow; vice-president, Dr. W. J. Brien; secretary-treasurer, Dr. S. Ellis. During the absence of Dr. Ellis, who accompanied the first Canadian contingent, Dr. C. L. Fuller will act as secretary-treasurer. It was resolved unanimously that members of the Association should give their services free to the families of the men who have left for the front.

ACADEMY OF MEDICINE, TORONTO

PRESIDENTIAL ADDRESS

BY H. B. ANDERSON, M.D.

Associate Professor of Clinical Medicine, University of Toronto

IN the first place, permit me to express my deep appreciation of the honour of having been elected president of the Academy of Medicine for the current year. When one reflects on the manifold duties and responsibilities involved, he may well be pardoned some misgivings as to the wisdom of your selection. If, however, an abiding faith in the mission of the Academy and of its possibilities of usefulness to the profession of Toronto, and a willingness to do one's best to promote its welfare, will compensate for other deficiencies, I may hope to justify a claim to these qualifications. Until two months ago everything gave promise that this year should be marked by a continuance of the phenomenal progress which has attended the Academy in increasing degree each succeeding year since its organization in 1907. The increase in membership, now about four hundred, the growing attendance at meetings, the ready response from leaders of the profession, abroad as well as at home, to contribute to our programmes, the steady growth of the library and not least, the general recognition that we now have a strong and representative organization, which reflects the opinion and mobilizes the influence of the profession, are all gratifying evidences of our progress.

The rapid growth of the Academy, however, has produced problems, pressing for solution. Already our accommodation for both library and meeting purposes is greatly overtaxed. The council has considered the matter and has formulated a plan to submit to the Academy to make provision for these urgent needs.

Through the munificence of Mrs. Ross the means were provided for the erection of a beautiful auditorium as a memorial to our revered colleague and first president, the late J. F. W. Ross. This splendid contribution with others in sight, if supplemented by reasonable assistance from our own members, brought within view the realization of a building in Queen's Park worthy of our profession and city.

The sudden breaking of the cloud which has so long threatened our Empire and the peace of the world, however, has dislocated the affairs of our country, and turned the resources and energies of our people from peaceful pursuits to a struggle against a military despotism, for not alone our national existence, but for the cause of freedom and the future of civilization. These events have made it necessary that our plans for building shall be held in abeyance for the time being.

In this crisis, as in the past, our profession has stood ready to accept its share of sacrifice, not only in answering the call of duty in active service, but in contributing both time and money for the care of the needy dependents of our soldiers, and for the relief of the increased sickness among the poor of our city. Most of us will not have to face the dangers and hardships of active service, but the hearts and prayers of every Fellow will follow those of our colleagues, including the chairmen of two of our sections, who have gone, and they may be assured that each of us will consider it not only a duty but a privilege, to conserve as far as possible their interests during their absence.

This session we are unlikely to be favoured by visits from transatlantic colleagues, whose contributions to our programmes have been such a valuable feature of our meetings in past years. It is a great satisfaction, however, to know that we still have our good American friends to call upon, one of whom in the person of Dr. L. G. Cole, of New York, we shall have the pleasure of hearing to-night.

There is none among us who does not look forward with confidence to the time when "danger's troubled night depart" and peace with honour shall be again established. In the meantime there is no duty more important, no service greater, which those of us who remain at home can render our country, than loyally to uphold those institutions and interests committed to our special care.

May one go further, and express the wish that one among you more worthy had been in my place to say that this is an opportune time to rise superior to personal differences, jealousies or faction; to set aside all "ancient forms of petty strife," and emulating the spirit of political parties at home and abroad, to cultivate harmony and good-fellowship, and unite on the common ground of our interest in our institutions and the profession at large.

It is idle as it is undesirable, among independent, earnest and educated men, to look for uniformity of thought or opinion on all

questions which may arise, but let us respect to the fullest degree honest differences, and as university men, let us cultivate a spirit of freedom of thought and action.

Above all let our quarrels and differences, if any, be among ourselves and not unnecessarily aired in public, or submitted to the judgement of outsiders indiscreet enough to meddle in family affairs, or ready to deliver judgements on *ex parte* evidence.

It is customary on occasions such as this to select for consideration some topic of outstanding interest and importance to the profession, a retrospect perhaps of recent medical progress, an appraisal of present conditions or an outline of the prospect for the future. In the ordinary even tenor of our way the task is usually not a difficult one, but what of the present, when bloodshed and destruction is the one absorbing interest of civilized nations?

Never by contrast, however, was the nobility and humanitarianism of our own calling more strikingly exemplified—the one profession whose sympathies and interests extend beyond international boundaries, whose chief duty is to fight against disease, to conserve the health and lives of the people, even to mitigate the scourge of war itself by its merciful service rendered alike to friend and foe. This is certainly not the time to abate our zeal or slacken our efforts in furthering the beneficent influences of the art and science of medicine.

Apart from the rapid advancement which has characterized every branch of medicine in recent years, undoubtedly the outstanding feature of the period is the world wide movement to reorganize, to correlate and to amplify, the various institutions and agencies associated with our professional work.

In the field of medical education we have seen the old proprietary schools, which served well their day and generation, gradually replaced by the medical departments of universities; the standards for matriculation and graduation have been raised, the course of study lengthened and many new subjects have been added to the curriculum; and adequate provision has been made for the systematic teaching of the fundamental sciences in extensive and well equipped laboratories, under the direction of full-time professors.

A further tendency has been apparent during the past few years to separate medical education more widely from practice, to regard it as "primarily an educational and not a medical question." The application of this principle has already resulted in radical changes in some institutions, where the professorships in medicine, surgery and other clinical branches, have been given to

men devoting all their time to teaching and research, to the exclusion of consultants or those otherwise giving a part of their time to private practice. Some authorities have gone even further, and advocate the displacement of the latter altogether as clinical teachers, because they believe it is impossible for men busy in practice to give the necessary time for the proper discharge of their academic duties.

Considering the amount of executive work thrown upon the head of a clinical department in a large medical school, such a limitation of his private work has apparent advantages, though in some institutions a more democratic plan has been adopted to distribute the burden, namely, by vesting control in a departmental committee instead of in one individual.

The adoption of a principle, nevertheless, which would place the education of medical students, especially in the clinical branches, exclusively or largely, in the hands of men deprived of the invaluable experience of consulting or private practice, must be viewed with grave misgiving by those who appreciate the responsibilities placed upon those whose duty it is to minister to the sick, and who know the necessity for not only a *thorough*, but a *thoroughly practical training*. The exclusion of men doing private work from clinical appointments, moreover, would appear a needless limitation of the power of our universities to select the most competent men, regardless of any arbitrary restriction of the field of choice; it would deprive those responsible for the treatment of private patients of important opportunities for keeping abreast with professional progress, and would tend to the development of a medical hierarchy, capable of maintaining their positions and status by controlling the facilities for advancement (provided at the public expense) instead of by the amount and character of work accomplished, under conditions wherein active competition is not only *permitted* but *encouraged* as far as possible.

In advising against the adoption of this principle, the Royal Commission on Medical Education in London points out "the grave danger against which practice is the best protection—the danger of forgetting the individual in the interest aroused by his disease." The financial burden involved by the limitation of clinical teaching to a class devoting itself entirely to this and research, however, makes the proposition at present impracticable and therefore of only academic interest, except in institutions where money has been specially provided for the purpose.

A glance at the hospital field reveals a similar activity, aimed

at bringing these institutions up to the requirements for modern clinical investigation, diagnosis, and treatment. In no place has evolution along these lines, especially in the provision of excellent accommodation for both private and charity patients, been more active than in our own city, where we now have buildings which compare favourably with those of any great medical centre in the world.

In America and Great Britain there has been a recognition of the necessity for radical changes in the organization of clinical departments in order to render effort more productive and to make provision for the practical application of recent scientific discoveries to diagnosis and treatment.

In some features of hospital work, we are still far behind the best Continental institutions. This applies especially to the organization of self-contained and independent clinics, each with its own wards, doctors, nurses and servants; with its own theatres, library, laboratories and equipment. This distinctive feature of the Continental system, as contrasted with the British, comes naturally with the former from the common custom of having different clinics in separate buildings or clinical institutes. The advantages of the independent clinical units, in fixing responsibility, in giving freedom in initiative and management, in permitting of the building up of each clinic along lines most suited for its special purpose, in avoiding friction and interference which paralyze action, and in providing generous rivalry, are very evident, and account in no small measure for their greater capacity to produce good team work.

Before the Royal Commission under the chairmanship of Lord Haldane, the inadequacy of the system so long in vogue in Great Britain, to meet modern requirements, was pointed out by many of the witnesses, Sir William Osler characterizing the existent conditions "as a legacy from a period when university ideals had not reached the practical side of our medical schools."

The necessity for considering these defects of organization applies to our own hospitals quite as much as to the British after which they are modelled. In no particular has the old system failed more conspicuously to meet the requirements of modern progress, than in the correlation of laboratories to the general clinical work of the wards. It is quite unnecessary to urge the essential importance of good laboratory work for the investigation, diagnosis and treatment of cases in the clinic.

Any serious consideration of the question must make it conclusive that laboratory examinations and investigations

are as much a part of the clinic as the use of the stethoscope or the speculum. The delegation of the laboratory work of the clinics to other departments—as pathology or pathological chemistry—can never be a satisfactory solution of the problem or productive of good results. Even the most imperfect attempt to meet the laboratory requirements of the clinics in this way, imposes on these departments an amount of detail work which must seriously interfere with their own special functions; it places laboratory investigations in the hands of those not intimately associated with the clinical problems to be worked out, and who, no matter how competent in their own spheres, cannot be expected to have a thorough grasp of all the clinical specialties; it deprives clinicians of both the incentive and opportunities for development as practical laboratory workers, or even to apply in a satisfactory way the results of scientific methods to the cases under their control; it results in a breakdown of the laboratory work of the clinic during holidays when ward-work must go on, though the college laboratories are more or less inactive; it detracts from the independence and dignity of the clinic and presents an insuperable barrier to a high order of intensive or special clinical effort.

I believe one may safely say that there is no matter so intimately related to the future development of our clinical work and the practical training of our students, as the provision of commodious and well-equipped laboratories in connexion with each clinic, for routine examinations, for teaching and for investigation.

I do not wish to be misunderstood as advocating a complete severance of the systematic work in the college laboratories from the applied work in the wards, but the relation should be consultative rather than executive. One need only consider the amount of work involved in the laboratory end of the clinical specialties, the special training required, the number of assistants necessary to accomplish the work, the fact that surgery, medicine, and other branches and their various sub-departments, all present different problems in equipment, technique, and direction, in order to grasp the impossibility of having this work carried out properly in other departments.

Every argument which can be so readily adduced in favour of the thorough training of students in the scientific departments during the primary years, hinges on the necessity for preparing them properly for the study and investigation of disease, when they later enter the hospital wards. It therefore follows that sufficient time and suitable facilities must be provided for the application of the

methods which they have learned, unless the chief purpose of their preparatory training is to be lost. Leaders in the scientific departments have been among the strongest advocates of this reform. Professor Welch, of Johns Hopkins, especially having urged the necessity for "the foundation and support of teaching and investigating laboratories connected with the clinics."

To what purpose, one may ask, does the young teacher spend years in the pursuit of laboratory methods, if he is to be cut off from applying his knowledge, and further developing himself, when once he passes from the systematic laboratories to the clinic? While one does not wish to appear as unnecessarily "emphasizing the obvious," the vital importance of this whole question is sufficient warrant for its careful consideration. Looking to the future, it appears plain that either clinicians must have the facilities for, and undertake the responsibilities of, the laboratory work of the clinics, or the laboratory men must assume control of the wards. Modern requirements are not met by the present separation.

Carlyle has said that "the end of man is an action, and not a thought, though it were the noblest." We have happily passed the period when we are satisfied with even an intimate knowledge of the work of others—by reading, thinking and talking of scientific medicine without doing. What is wanted now is the opportunity more than the stimulus to work—the conditions toward which the energies of our profession have striven, when our men might be able to join as active participants in the march of progress rather than continue as interested spectators. It has been said, with some warrant for the statement, that while our clinical staffs have discharged creditably their obligations to the sick, that they have as yet contributed little in the way of researches of scientific value. But surely if they have failed, it has been the failure of accomplishing the impossible, of attaining the end without means, of turning out the finished product before the erection, manning, organization, and equipment of the plant, rather than entirely from fault of the individual.

I should like, if time permitted, to refer to numerous other lines along which a rapid evolutionary process is taking place at the present time, such as the establishment of special institutions for medical research, the wonderful activity in the domain of public health, the popular crusades against tuberculosis, cancer, venereal disease, infant mortality, and occupational diseases; the legislative enactments in connexion with workmen's compensation and national insurance, all of them questions in which we are specially

interested and toward the solution of which we should use our influence.

It requires no prophetic vision to see the bearing of all these matters on the future of the medical profession. It can be said to our credit, that we have always been ready to sacrifice personal interest to the common good, so that whatever tends to progress is assured of our sympathy and hearty support.

There is unfortunately a disposition on the part of some to mistake mere novelty and change for progress; and of others, looking at a broad question from a particular angle, to overestimate the relative importance of one aspect of professional activity, usually their own, as compared with another. It is here that the steadying influence and hard common sense of the profession at large, whose theories have been tempered by the cool winds of practical experience, should make its influence felt, so that, while ready to try all things, we may hold fast to that which is good, at least until something better is at hand; and under all circumstances let us be assured that, come what may, the chief aim and object of our profession shall be kept steadily in view—the control and cure of disease.

But it must not be assumed that the future progress of medicine is bound up entirely in the activities of colleges, hospitals, research institutes, boards of health, and so forth. The important strategic position occupied by the general practitioner for attacking many of the problems of disease—for studying the initiation of disease, its course perhaps through many years, and its final outcome, has not been fully appreciated.

This aspect of clinical progress is dealt with in a masterly way in a paper by James Mackenzie, published in the *British Medical Journal*, January 3rd, 1914, and which should be read by everyone, especially by our younger men, who frequently undervalue the opportunities which general practice affords for scientific study. Coming from one, himself once a general practitioner, who has probably done as much as any other physician of our time to apply scientific methods to the elucidation of important practical questions, his words are worthy of our earnest attention; he says, "the general practitioner must be recognized as an essential adjunct in research. To him especially we should look to find out the early stage of disease and its progress. Hitherto the lack of this assistance has been the cause of the tardy advance of medicine."

There is no essential reason for lack of harmony, in work or aim, among the different branches of our profession. Friction means

dissipation of energy and lessened efficiency. Mutual support, sympathy and coöperation are essential to success. In the fight against disease, we represent different sections of one great organization, each with all-important duties—the laboratory worker and experimenter devising and proving new implements and methods, the hospital clinicians and specialists bringing forward that which is new and best withstands the test of application—thus keeping open the communications with the men on the firing line, the great body of practitioners, on whose training and efficiency, after all, victory ultimately depends. Our students are the recruits who must be imbued with the proper spirit and trained to take their places in the ranks depleted by the casualties of service and by the falling out of the veterans.

At the time of the International Medical Congress last year, a London paper in an editorial on "Our friend the doctor" expressed a layman's point of view in these appreciative words: "The discoveries of Lister, Pasteur, Metchnikoff and Ross—to name only a few—constitute an epic worthy of a Homer. The slow dragging of her secrets from nature, the discovery of the thousand unsuspected agents through which she works, is a fascinating study to those who understand it. The laboratory is the arsenal from which the hand of the physician and surgeon is armed. But it is the wise, experienced, tender man, the first to be called, and the last, too often, to be paid, of whom we common folk are thinking when we speak of 'the doctor.'"

Every intelligent medical man appreciates the indebtedness of modern practice to laboratory men, and disparaging remarks regarding the value of their work reveal the weakness of the critic more than of the object of his criticism. On the other hand practitioners generally will approve of Meltzer's candid criticism of a fortunately rare type of scientific prig, who affects a lofty disdain of everything practical and who thinks it more noble to investigate a dead rabbit than to attend a sick man. "The trouble with men trained exclusively in laboratories is two-fold: first, they do not seem to see that a medical fact observed critically by a capable physician deserves as much credence and consideration as a fact developed by laboratory methods; and secondly, the laboratory man offers positive opinions in a field in which he has no experience." We should remember, however, that clinical and laboratory knowledge are in no way antagonistic or mutually exclusive.

Among the other factors exercising an influence in the present forward movement, we must not overlook the importance of such

institutions as the Academy of Medicine. It provides every year an extensive and valuable course of postgraduate instruction; through it our younger men are given an opportunity—by presenting results of investigations or reports of cases, to establish themselves in the estimation of their *confreres*, who will not be slow to judge them by the quality of the work they bring forward; our senior men, in the seats of the mighty, are enabled to demonstrate that their places of trust and opportunity are worthily occupied, by presenting to the great body of practitioners composing the bulk of our membership what is latest and best in their several departments; our colleagues in the scientific departments to bring their investigations and discoveries before the men who can test out their value in practice.

The library, however, is the nucleus around which centres the life of the Academy. From the time of the Alexandrian School to the present, no great medical centre ever developed apart from good libraries. Osler has said, "it is hard to speak of the value of libraries in terms which would not seem exaggerated. To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients, is not to go to sea at all. For the teacher and worker a great library is indispensable. They must know the world's best work and know it at once; they mint and make current coin, the ore so widely scattered in journals, transactions and monographs." It should therefore be our steady aim to make this one of the great medical libraries of the world, and I believe many of us will live to see the day when this shall have been accomplished. It may be of interest to you to know that among medical libraries at present, we rank second in Canada, twenty-ninth on this continent, and seventy-sixth in the world.

To indicate the possibilities of growth, it is encouraging to know that when Dr. Billings took charge of the Surgeon General's Library at Washington in 1865, it contained less than two thousand volumes, while at present it has on file one hundred and seventy-five thousand five hundred and seven volumes, and its index-catalogue has a reference to every rare case that has been recorded since the discovery of printing, A.D. 1450. Our Fellows, through arrangements made in Washington and the deposit of a sum of money to cover insurance, by the late Dr. Ross, have the great privilege of being able to have access to books and references from this library by merely paying express charges.

We are now prepared, at request, to place at the disposal of our members any important journal, transactions, reports, monographs or text-books in which they may be specially interested.

An historical section of our library in which is collected documents relating to our history and development, biographies, autographs, photographs, hospital and health reports, journals, etc., should be started as soon as possible, before passing years render much material relating to our early days unavailable.

The erection of our new building will afford an opportunity for the descendants of the many notable members of our profession, who were so closely identified with the settlement and early development of Upper Canada, to appropriately commemorate their names and deeds in our common meeting place, and thus link up the history of the period in which they lived with the present. In this connexion it affords me much pleasure to say that a grandson of one of the early physicians of Toronto has set aside in his will the sum of \$10,000 to establish a lectureship in connexion with the Academy to be named after his grandfather.

The movement to organize the various city and district medical societies throughout the province and link them up with the Ontario Medical Association, and through it with the Canadian Medical Association, should receive our active support as a measure making for professional cohesion, and the increasing of our corporate influence in the community.

I cannot let the occasion pass without referring with deep regret to our losing the services of Miss Mason, who filled the position of librarian and secretary to the Academy so acceptably for a number of years. Her industry, devotion to duty, and unfailing courtesy, won the sincere regard and appreciation of all, and our best wishes will follow her in her new vocation. Owing to the increasing amount of work, the Council considered it necessary to separate the duties of librarian and secretary. The former has been placed in charge of Miss Charlton, who comes to us with a reputation established by many years' service in McGill Medical College, as one of the foremost librarians on the continent; the latter has been filled by the appointment of Miss Runciman, who already has given ample evidence of her fitness for the duties of the position.

It is our sad duty at this time, humbly to acknowledge that "the art whose province it is to heal and to save, cannot protect its own ranks from the inroads of disease and the waste of the Destroyer." Since we last met, one of our best known and most deeply esteemed Fellows and a member of Council has been called from his labours. Dr. Bruce L. Riordan was a big-hearted, generous friend, devoted to his calling, and his early death at the height

of his professional career is a great loss to our ranks and to the community he served so faithfully. To the widow and son we all join in expression of our deepest sympathy.

The medical profession of Toronto and the Province of Ontario since its foundations were laid a century ago by the old army surgeons, has exercised an influence on our political, educational, and social development, which stands as a lasting monument to the character, capacity and influence of its members. We have a noble heritage and it is our duty to see that it is transmitted to those who follow us, unimpaired in dignity, honour and usefulness.

Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE fifteenth regular meeting of the Society was held Friday, May 1st, 1914, Dr. D. F. Gurd, president, in the chair.

LIVING CASE: Short circuiting for fæcal fistula, by Dr. C. W. Archibald.

DISCUSSION: Dr. Bazin: The use of the fascial band is certainly ingenious. Dr. Archibald described this some time ago in closing off the pyloric ring in gastro-enterostomies: it works well there and should do equally well here. The necessity of short circuiting for fæcal fistula does not appeal to me when one can mobilize the bowel as freely as in this case. Unless the adhesions were very dense, there are other ways of relieving this condition. I should like to know how low down the fistula was and how much of the bowel was put out of circuit by the stoma and whether the fistulous area could not have been excised with anastomosis of the free ends.

CASE REPORT: Cases of renal calculi, by Dr. Wm. Hutchinson.

Cases of renal calculi may be divided into two groups: those in which the stone lies free in the renal pelvis, producing typical intense colic, and those in which the stone is impacted in the calices and in which renal colic is not present. Dr. Hutchinson reported several cases illustrating these two groups and exhibited the stones removed.

PATHOLOGICAL SPECIMENS: Drs. L. J. Rhea and A. T. Bazin.

1. Dr. Bazin: Sarcoma of the knee. Patient, a woman aged thirty-four, gives usual history of receiving, three months prior to

onset of definite symptoms, slight injury to the knee, in this case by the knee of a horse knocking against her knee. It gave her momentary pain but did not inconvenience her until, after the lapse of two weeks, she began to limp and found it increasingly difficult to straighten the knee; furthermore there were lightning pains at night and all the evidence of joint involvement. She was seen three months after the injury, no swelling, no effusion; painful on both active and passive motion. History of leucorrhœa, married thirteen months, no pregnancy. Weight extension employed. Shortly after this the knee began to swell. Admitted to hospital two months later with a very large swelling of the knee, decided flexion with much spasm of the flexor muscles. Swelling uniform and subcutaneous veins much enlarged. Patient emaciated, irregular temperature $99\frac{1}{2}$ - 100° . The x-ray plate taken on admission does not show anything definite, that taken three weeks later shows a considerable increase in size and the line of compact tissue of femur is broken both in front and behind; there is deposition of lime salts which masks the bone very considerably. Tuberculin and Wassermann were negative. Sarcoma was finally diagnosed and amputation performed for relief of pain. A recent report from the patient states that she is much improved in her general condition, weight and strength rapidly increasing, demonstrating that a toxin detrimental to health is absorbed from these rapidly growing sarcomata, the removal of which is good practice even though recurrence is certain.

Dr. L. J. Rhea; The specimen was frozen and sawed down through the centre. One sees in the lower part a large tumour which has involved the muscles and when one cuts through this there are small areas of lime deposit in it. It does not involve the shaft itself but, in places, the periosteum is destroyed; it has not extended through the outer table of the bone. This is interesting, not only from the large size and the diffuse infiltration without enlargement of the bone but in regard to the type of tumour itself. Histologically one sees that it is a sarcoma not of the clear type; there are areas of cartilage, spindle-celled sarcoma, and areas that are very myxomatous.

2. Sarcoma of the stomach. Dr. A. T. Bazin. Man, aged forty-four, admitted to hospital last summer under Dr. G. G. Campbell and transferred to surgical ward for operation. Had stomach symptoms for four months, vomiting, rapid loss of blood and strength. Skiagram eight hours after a bismuth meal showed most of the meal still in the stomach. There was a definite pyloric

stricture and a palable tumour. Operation was done simply to relieve vomiting and a posterior gastro-enterostomy performed. The growth was the size of a hen's egg. The man lived in absolute comfort as far as the stomach symptoms were concerned from June 13th until March 18th, when he died of asthenia. At autopsy the mass was the size of a foetal head, it had increased upon the anterior wall of the stomach more than upon the posterior; it overhung the stoma but left it absolutely clear.

Dr. L. J. Rhea: The tumour at the time of operation was near the pylorus and the stomach wall was adherent to the liver, and the tumour involved but a small area of stomach in comparison to what it does now. It is a very large carcinoma completely surrounding the stomach and the edges hang over very markedly like a cauliflower. Thus ten months after the operation one sees that the gastro-enterostomy wound is quite a distance from the tumour and is nowhere infiltrated by the tumour itself. We did not find any metastases in the liver.

3. Case of Addison's disease. Dr. L. J. Rhea: The case occurred in Dr. Laffeur's clinic. Tuberculosis of the adrenal, and, demonstrated in the apex of the lung, is the healed primary lesion. The adrenals were involved with caseous tuberculosis. The man was aged twenty-seven, ill only three or four days. Became acutely ill with high temperature not unlike typhoid; Wassermann negative. At autopsy he had miliary tuberculosis involving the spleen, liver, all abdominal organs, and the brain. The interesting point was in the adrenal, the left had no tuberculosis in it but the right was completely caseated and no adrenal tissue found. It was a tuberculosis of apparently long duration.

Dr. Rhea exhibited sections of these specimens.

4. Tuberculosis of the lungs, Dr. H. B. Cushing. Dr. Cushing exhibited a series of specimens of lungs from autopsies on children dying in the Children's Memorial Hospital of tuberculosis in some form or other.

The organs in the first case were taken from a child of one year dying of tuberculous meningitis; the child was in good health until the development of the signs of meningitis. The tissues of the mediastinum showed a mass of caseous tuberculous glands. The left lung had no caseous glands at the hilum and was normal throughout; the right had an old caseous tuberculous gland close to the branches of hilum and, on examining it carefully, in the base of the lung on the diaphragmatic surface there was a small fibrous and caseous mass, the so-called primary focus of the tuberculosis.

The organs in the next case were from a child of five, also

dying of tuberculous meningitis and showing no symptoms of tuberculosis before the meningitis developed. Again there was found a mass of caseous glands in the mediastinum, and again the largest glands and those more distinctly caseous were at the root of the right lung. There were a few scattered miliary tubercles throughout the lungs and the only old focus to be found was in the right lung, the size of a pea caseous and fibroid. Again in this case the glands at the root of the right lung were those most affected and in the middle lobe was a small, apparently old, focus.

The lungs in the next case were taken from a girl who died of tuberculous peritonitis. The father died of consumption. She was apparently in very good health before the peritonitis developed; afterwards the elbow became involved and the knee, and she finally died of the peritonitis. At autopsy again were found caseous peribronchial glands, more marked on the one side—in this case the left—and at the base of the left lung a small old focus again about the size of a very small pea.

The lungs in the last case were of a child dying of acute miliary tuberculosis. There was slight fever, and a short course of two or three weeks. The whole of the lungs were studded with miliary tuberculosis, as also the other organs of the body. Again there were caseous peribronchial glands and in this case was a small focus apparently older than the rest, again in the middle lobe on the right side.

These cases are from autopsies performed within the last two months and are consecutive ones and, I thought, would be of interest as illustrations of Ghon's theory of a primary focus of tuberculosis in the lungs of children.

DISCUSSION: Dr. L. J. Rhea: The question of finding an old focus of the lung at autopsy is simply a matter of taking time. I saw Gohn's collection of such old foci and some were represented by the very smallest scars; and I was informed that they spent hours in looking for these primary foci.

Dr. C. K. Russel: I would like to ask if Dr. Cushing's cases prove the argument that cases of tuberculosis in children such as these are air-borne and not from stomach or other processes.

Dr. H. B. Cushing: The prevalent theory is that it is air-borne, but the fact that the primary focus is in the lung does not decide that it is air-borne, the bacilli may have been carried there through the blood stream or lymphatics.

PAPER: The paper of the evening on appendicitis in tuberculous subjects was read by Dr. J. R. Byers of St. Agathe, Quebec (by invitation), associated with Dr. E. W. Archibald.

The Canadian Medical Association

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1044

The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor

216 Peel St., Montreal

Yearly in Advance \$5.00

Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 145 Wellington Street West, Toronto. All matter for publication should be addressed to the Editor, 216 Peel Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Secretary-Treasurer, Dr. W. W. Francis, 836 University Street, Montreal.

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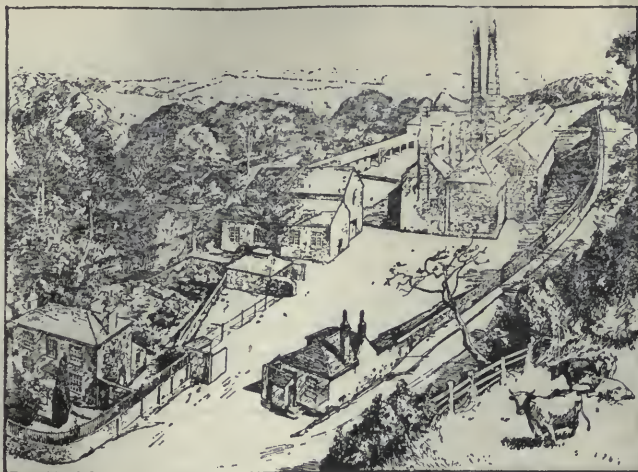
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The Canadian Medical Association Journal

VOL. IV.

DECEMBER, 1914

No. 12

THE SELECTION OF ANÆSTHETICS, SEQUENCES AND METHODS

BY F. W. NAGLE, M.D.

Lecturer on Anæsthetics and Demonstrator of Pharmacology, McGill University; Anæsthetist to the Royal Victoria Hospital, Montreal, and to the Montreal Maternity

ALTHOUGH there are more than one thousand substances which may be used as anæsthetics, experience has shown that only a few of these are safe enough for routine use. These are nitrous oxide, ether, chloroform, ethyl chloride, and the cocaine derivatives used as local and spinal analgesics.

No single anæsthetic will answer all requirements. In some clinics, owing to economic considerations or personal enthusiasm on the part of the surgeon, one particular method is used to the exclusion of all others and is pointed out as the best for all cases. This conclusion is open to criticism; for the good results obtained are due not to the anæsthetic in itself but to the expertness in administration gained by constant practice with one method, and in the hands of anæsthetists whose experience is limited, the results do not compare at all favourably with those obtained when the anæsthetic is chosen according to the requirements of each particular case. For example, in the Mayo clinic ether by the open drop method, and in the Crile clinic nitrous oxide with oxygen, are advanced as ideal anæsthetics for routine use. They probably are in these clinics; but in the report of the Committee on Anæsthetics of the American Medical Association, ether given by the drop method is placed sixth on the list of anæsthetics in point of safety, while the consensus of opinion among a large number of

Read at the annual meeting of the Canadian Medical Association, St. John, N.B., July 8th, 1914.

clinics using nitrous oxide throughout America is that only about one third of all the cases are suitable for nitrous oxide with oxygen.

We should remember, too, that in some cases the best results are obtained not from any one of these drugs or methods alone but from judiciously combining one with another or substituting one for another during the operation.

It would be foolish to lay down a law concerning each anæsthetic and its use for any particular class of patient or operation, because the experience of the anæsthetist, the facilities for administering anæsthetics, and the special features of the individual case must influence a choice. A thyroidectomy which might be done with advantage under ether by the drop method in the Mayo clinic, would rightly be performed under a combination of nitrous oxide with oxygen and local anæsthetic in the Crile clinic; and the same case would be done more satisfactorily under chloroform by a surgeon more familiar with chloroform than with either of the other anæsthetics.

There are, however, certain indications for each anæsthetic.

Nitrous oxide alone is indicated in minor operations of very short duration in patients over five years of age, who are not suffering from myocarditis, arterial sclerosis, or any grave obstruction to the respiratory tract. Nitrous oxide combined with oxygen is an ideal anæsthetic for all toxic patients, for patients suffering from pulmonary tuberculosis, renal lesions, or diabetes, and for patients who have had distressing after-effects from some other anæsthetic on a former occasion, particularly if the surgeon is satisfied with the minimum amount of relaxation of the muscular tissues; and if he has learned to operate gently, realizing the light grade of anæsthesia produced by this agent. Preliminary medication with morphine and atropine, or some variation of this treatment, should always be given half an hour before operation. The contra-indications are the same as for nitrous oxide alone, except that the presence of oxygen lessens the danger from high blood pressure and from asphyxia. Young children, and robust and alcoholic adults do not take this anæsthetic well.

Ether is indicated in all major operations where good muscular relaxation is desired, and where the patient's general condition is good and no contra-indication, such as diseased lungs, kidneys, liver, or pancreas, is present. Ether is particularly well borne in patients suffering from heart disease where compensation is established. Preliminary medication with morphine and atropine is advisable. Owing to the unpleasant features associated with

the induction of anæsthesia by ether alone, it is better to produce unconsciousness with nitrous oxide and oxygen, gradually to add ether until full anæsthesia is obtained, at the same time diminishing the inducing agent, and finally to give ether only.

Chloroform is often used for the induction of anæsthesia, for minor operations, and for operations in very young patients. It is a powerful anæsthetic and may be resorted to with advantage in alcoholic patients who do not relax well under ether, and in the reduction of dislocations and fractures where great muscular relaxation is required, and where there is no handling about any of the sympathetic nervous centres. It is a favourite anæsthetic for obstetric patients, although ether is now coming into favour. Many operators prefer chloroform anæsthesia for operations upon the brain and about the head and neck, because of the absence of profuse bleeding. It is a dangerous anæsthetic for operations deep in the epigastrium and about the sphincters, because an overdose may be taken before the symptoms are recognized. Unlike ether, where the narcotic effect begins to diminish at once upon withdrawal, with chloroform the narcotic effect goes on and deepens after withdrawal of the anæsthetic—sometimes for many minutes.

Preliminary morphine and atropine should not be given with chloroform, because they greatly increase the already powerful narcotic action of this drug, and if untoward symptoms should arise, too profound depression of the respiratory centre occurs and resuscitation is difficult.

It must be remembered that, although both nitrous oxide and ether have some slight toxic effect upon the blood corpuscles and upon the protoplasm of the viscera, chloroform, if given over any period of time and to any great depth of anæsthesia, breaks up the blood corpuscles to a much greater extent, produces profound visceral changes, and sets free toxins which cause a grave and sometimes fatal condition known as secondary chloroform poisoning.

Ethyl chloride, which is a very quickly acting and unpleasant anæsthetic, with a good deal of the asphyxiant action of nitrous oxide, was formerly considered intermediate in safety between ether and chloroform; but within the last few years the statistics in England have shown it to be even more fatal than chloroform. Its chief use at present is as a local anæsthetic, although it is also used as a general anæsthetic for short minor operations and for inducing anæsthesia preliminary to the administration of ether.

Local analgesia may be used in many cases where the patient will allow of operating during the conscious state, and the surgeon has learned to avoid painful manipulation and traction which may set up pain impulses producing shock more serious than that caused by a general anæsthetic. In this connexion it is safe to state that we will use more and more in the future a combination of local with light general anæsthesia, under which the patient is oblivious to what is going on and is not on the watch for pain impressions from the site of operation, which gives the surgeon a better chance to manipulate the tissues in the operative field.

Spinal analgesia is indicated for operations below the umbilicus in patients with very grave contra-indications to a general anæsthetic, where great relaxation and freedom from sensation are necessary. It is particularly valuable in traumatism of the lower half of the body, because it cuts off all the shock impulses and prevents their passage through the spinal cord. A great deal has been written for and against this method for routine use, but in most clinics its use is confined to the indications named.

It must not be forgotten that it is sometimes desirable to substitute one of these agents for another. For instance, when a patient shows evidence of failing vitality during operation, it is a good thing to change from ether or chloroform to nitrous oxide with oxygen; or it may be necessary in a case which has been started under local anæsthetic to supplement it with a small amount of general anæsthetic.

The age of the patient enters to a certain extent into the choice of an anæsthetic. Although anæsthetics may be safely borne by patients of all ages, some agents are unsuitable for young children. Gas, for instance, does not control muscular movements and readily produces asphyxia; and ether, especially in induction, is badly taken on account of its irritating local action. Old people generally take ether or chloroform well. Owing to their weak musculature, they require less anæsthetic than middle-aged patients.

It has already been stated that heart lesions, except those of the most severe type, do not contra-indicate the use of a general anæsthetic, especially ether.

For anæsthetizing patients with diseased kidneys, the tendency seems to be more and more in favour of ether as opposed to chloroform, but nitrous oxide with oxygen is to be preferred, because these patients sometimes have pulmonary complications after operation.

When we consider the choice of an anæsthetic according to

the site of operation, we must remember that nitrous oxide gives poor relaxation, that ether relaxes well in most cases, and that chloroform is the most potent of all anæsthetics; but that they are poisonous in the same order; and that chloroform, particularly in operations where vital centres are interfered with, may produce a rapidly fatal result. Furthermore, nitrous oxide and ether produce a great deal more bleeding than chloroform. This, however, is considered an advantage by some operators, because it lessens the danger of secondary hæmorrhage. Nitrous oxide, being followed by less post-operative nausea and vomiting, causes less strain on abdominal wounds. Ether produces hypersecretion of mucus and saliva with the danger of aspiration pneumonia, and is often followed by severe retching and vomiting.

The selection of anæsthetics for operations about the head, neck, and thorax, depends very largely upon the methods of administration available. For instance, in an operation upon the tongue, if some means of administering ether by insufflation is not at hand, chloroform is indicated.

The most commonly used sequences are gas and oxygen followed by ether, chloroform followed by ether, and ethyl chloride followed by ether. The nitrous-oxide-ether sequence is not dangerous, and overcomes all unpleasant impressions in the mind of the patient concerning the induction, while it has the advantage that anæsthesia is quickly produced, and the struggling and hypersecretion sometimes encountered when ether alone is used for induction, are abolished. In the use of the chloroform-ether sequence, if struggling or respiratory irregularities should arise, chloroform should be abandoned at once and ether substituted until the breathing becomes regular and struggling ceases. The same is true of the ethyl-chloride-ether sequence.

The best way to administer nitrous oxide is to give it under slight positive pressure combined with whatever percentage of oxygen may be desired. Instruments for this purpose are manufactured and have been brought to a high degree of efficiency.

Ether may be given drop by drop upon an open mask, a method which has the great advantage of immediate safety but which often does not produce perfect relaxation, and in some cases is followed by post-operative pneumonia; or it may be given by the closed or rebreathing method, which requires more skill and which, in the hands of a novice, may be very dangerous; or it may be given by insufflation, that is, a volume of air mixed with the required proportion of ether vapour is blown under slight

pressure directly into the patient's trachea or pharynx. Insufflation overcomes the mechanical obstruction in the patient's mouth, and takes the great load off the respiratory muscles which is caused by inhalation ether anæsthesia. Intratracheal insufflation prevents aspiration of foreign material into the lungs, and gives quiet regular breathing, good colour, normal pulse and blood pressure, absence of venous engorgement, and quick, uneventful recovery. It is the best way to give ether.

Ether may also be given intravenously by directing a mixture of from 5 to 10 per cent. ether in normal saline into the patient's veins. This method is not growing in favour.

Colonic ether anæsthesia is produced either by pumping the vapour mixed with air into the colon, or by introducing a mixture of olive oil with ether high into the colon. The latter method, suggested by Gwathmey, is now being tried with considerable success in many of the New York hospitals, and is especially useful for operations about the head and neck.

Chloroform may be given drop by drop upon an open mask or through some dosimetric apparatus. Dosimetric instruments are not reliable when they depend upon the variable factors of the patient's respiratory rate and volume; but when a measured quantity of chloroform and air is given by the insufflation method, they are very accurate.

Mixtures of nitrous oxide and ether are given in a closed inhaler under slight pressure, using the gas apparatus already mentioned. Mixtures of chloroform and ether should never be given in a closed inhaler.

Ethyl chloride is given by the closed method in small measured capsules of 3 and 5 cc. capacity. When used for continuous anæsthesia, it is given like chloroform.

Local analgesics, the best of which is probably novocaine, are given by hypodermic injection into the area of operation or into the nerve trunks going to the field of operation.

Spinal analgesia is produced by injecting into the spinal canal 5 per cent. tropacocaine after it has been mixed in the syringe with spinal fluid. In order to avoid the ascent of the anæsthetic toward the medulla, great care must be taken in the posturing of the patient.

A well equipped hospital should have a choice of the anæsthetic agents already mentioned, and should be provided with instruments for their administration and with anæsthetists proficient in their use, so that after careful study of each individual

case the most desirable anæsthetic or anæsthetic sequence and method of administration may be used, and may be changed, if necessary, during the operation. If the operator has not all of these anæsthetics at his command, or if he is dependent upon unskilled anæsthetists, he has at least a choice of ether and chloroform and their combinations.

CONCLUSIONS: 1. It is advisable to have several anæsthetics at our disposal, because in many cases some one of them or a combination or sequence of them will offer decided advantage to the patient.

2. In hospital work proficient anæsthetists and suitable apparatus should be provided, so that full advantage may be taken of the best methods, sequences, and combinations.

3. If the choice is limited, and there are no grave contraindications, that anæsthetic should be chosen with which the anæsthetist has had the most experience.

*Discussion**

Dr. Stewart: What practice does Dr. Nagle follow concerning the use of chloroform?

Dr. Nagle: I use chloroform for the induction of anæsthesia in very young patients, for anæsthesia in minor operations and in operations upon patients with pulmonary tuberculosis where no gas-oxygen is available, in obstetric operations up to the time the child is born, in the reduction of fractures and dislocations where great relaxation is necessary, as a sequence to ether in alcoholic and muscular patients who are not sufficiently relaxed, and often in operations about the head and neck.

I use the method described by Dr. Stewart, paying particular attention to the respiration, and always substitute ether when any irregularity arises, until smooth breathing has been reëstablished.

I have abandoned the use of the Vernon Harcourt inhaler, because it depends upon the patient's respiratory rate and volume for its dosimetry, and because on the two occasions when I saw bad results from chloroform, this inhaler was used.

Concerning the statistics of chloroform administration, I notice that the extremely low death rate for nineteen years quoted by Dr. Stewart was for a period when no severe intra-abdominal

* See also the discussion on Dr. Stewart's paper, p. 1064.

operations were performed. I doubt if the same figures hold good in the present day of severe major operations.

Dr. Hunter: What anæsthetic does Dr. Nagle choose for diabetic cases and for cases with acetonuria?

Dr. Nagle: Local, spinal, gas-oxygen anæsthesia.

Dr. Primrose: Dr. Nagle's suggestions are advisable for a professional anæsthetist but do not go in sufficient detail into the requirements of a surgeon operating outside a hospital.

Dr. Nagle: Outside a hospital a surgeon has at least a choice of ether and chloroform. If he is doing a grave abdominal operation, where he cannot give a good deal of attention to the patient's general condition, he will do well to give ether by the drop method, but if he is used to employing chloroform, and the operation does not involve any vital centres, he may give chloroform under his own supervision, because it is easier to administer. This ease of administration is the reason why so many men use chloroform in preference to ether, in spite of the fact that they are taught that ether is safer. If the surgeon has a competent anæsthetist, he will use ether to advantage in the large majority of cases.

CHLOROFORM ANÆSTHESIA

BY JOHN STEWART, M.B., LL.D.

Halifax, N.S.

I HAVE a vivid recollection of the consternation and dismay which spread through the Edinburgh Royal Infirmary one day in 1877 when it became known that a patient had died there from chloroform, the first case in nineteen years.

Vivid also is my recollection of the way in which Mr. Chiene spoke of it. "Now," he said, "there will be another. I cannot tell you why. These things never come singly. It is like the suicides from the Dean Bridge, if one happens another soon follows and a special policeman must be set to watch there for some time." He was right. In a very short time there was another, and I believe a third case occurred before the year was out. Mr. Chiene's words implied a belief in some psychic element in these phenomena, and, as I hope to show, he was right.

The man had been chloroformed in his bed in the ward, then lifted into the "basket" and carried, as was our custom, by four students to the operating theatre. The way led through a long dim corridor echoing with the sound of many feet. The student who was giving the chloroform could not hear the patient's breathing nor see his face very clearly, indeed I was told that the towel on which the chloroform was poured lay on the man's face all the way. When he was lifted on to the table he was dead.

I have told this story to illustrate the safety of chloroform if given in the right way, and by that way I mean the Edinburgh method, or I should say, what was the Edinburgh method when I was a student, the method of Simpson, Syme, and Lister.

From its first introduction in 1847 chloroform had been given in Edinburgh by the open method, poured or sprinkled on a towel or piece of lint, and with satisfactory results. Dr. Snow, the eminent authority on anæsthetics in London, had at an early date demonstrated that there were "two essentially different ways in which chloroform may kill, viz., by a direct sedative action on the

heart when the chloroform is in a large proportion to the air, and by a suspension of the respiratory functions while the heart is still acting, when the chloroform is largely diluted." He determined a safe and efficient percentage and devised an inhaler to regulate the proportion of chloroform and air. By experiment Lister showed that the percentage of chloroform vapour inhaled by a patient anæsthetized in the ordinary Edinburgh method was practically within the limits of safety determined by Snow. It was evident then that the essential point in giving chloroform was to watch the respiration, for this would afford the earliest indication of overdose, and the Edinburgh rule was to see that the respiration was unobstructed and unembarrassed and to give chloroform freely. In London where the crucial point of Snow's experiments seems to have been overlooked there was a dread of primary cardiac paralysis, the first care of the chloroformist was the pulse and the action of the heart, and it happened with painful frequency that the earliest intimation of cardiac mischief was a sudden failure of the heart, generally and quickly fatal.

It seems amazing that in two cities only four hundred miles apart such an extraordinary difference should be found. In the London hospitals chloroform was administered by a professional anæsthetist, with an ingenious apparatus, studying the heart and pulse with meticulous care, behind him an array of tragic fatalities, and before him the dread of a coroner's inquest. In the Royal Infirmary in Edinburgh it was given by a student whose sole apparatus was a towel and a pound bottle of chloroform, who never troubled about the patient's heart and did not feel his pulse, and who approached his task with cheerful and unhesitating confidence. And yet, in Edinburgh chloroform was proverbially safe, in London notoriously dangerous. Of course there were explanations, some very far fetched. It was thought, for instance, that the national beverage might have some influence, that beer might predispose to chloroform mortality, while whiskey strengthened man's heart. There are two explanations. One is that where in a hospital chloroform is always given by a professional anæsthetist the students have no opportunity of acquiring that personal experience which alone will give them courage and confidence in using it when they engage in practice.

The chief explanation is that there is a right and a wrong way of giving chloroform, and that the Edinburgh way was the right way. Results tell. If the London method resulted in a mortality of many cases every year and if the Royal Infirmary of Edinburgh

can point to nineteen consecutive years without a death, it is evident there is something wrong in the London method. There was something wrong with the case I have narrated. It is evident the Edinburgh rule, well epitomized by Mitchell Banks as "Plenty of air and plenty of chloroform", was not followed. The hapless man with a towel saturated with chloroform lying on his face while he was carried down the corridor may very likely have had an overdose of chloroform, he certainly could not have had plenty of air. The first duty of the chloroformist, a vigilant care for the respiration, was impossible under the conditions, and this explains how the successful record of nineteen years was broken, and the dismay and distress with which the event affected us was a striking testimony to the confidence in chloroform which we had acquired. I am quite aware that this claim of nineteen years of unbroken success may be received with incredulity if not with derision and I shall return to this when I come to present a few statistics.

As to the next case, which Mr. Chiene's prophetic soul foresaw, there may be a different explanation. There may have been a psychic element. The patient may have heard of the fatal case and have been agitated, and worse still, the student may have been nervous. How often I have seen and suffered from the nervous chloroformist! Without the courage to give chloroform freely, without the self-control to attend strictly and only to the respiration, the nervous chloroformist is constantly pinching or pricking the patient's skin to find if he is unconscious, raising the towel or mask to look at the pupil or test the corneal reflex, surreptitiously feeling the pulse, doing half a dozen things instead of attending to one, he does not give enough chloroform, and what the patient does get he gets irregularly. Timidity is as dangerous as recklessness. The chloroformist must not be one who

"Either fears his fate too much
Or fears it not at all."

He may be cautious, he must be bold. Fifty years ago experience had taught that a timorous and hesitating anæsthetist was a source of danger, and to-day we have physiological demonstration why this is so. Levy has shown that the cause of death under chloroform is ventricular fibrillation and that too light an anæsthesia and intermittent administration contribute to this condition. So that I believe it is a fair claim that if the first patient died from too much chloroform the second may very well have died from having had too little. A noticeable fact brought out at coroners'

inquests is the frequency with which it is said that only a very small quantity of chloroform had been given. Another fact is that very nearly one half of chloroform fatalities occur during trivial operations, the sort of cases in which vigilance is apt to be relaxed.

In 1888, Surgeon-Major Lawrie, Residency surgeon at Hyderabad, impressed by the continuous chloroform mortality reported in England and convinced from long experience of the safety of chloroform given by the Edinburgh method, organized a chloroform commission. Its investigations supported the teaching of the Edinburgh school but they were not accepted in England, the *Lancet* stating that they were "utterly at variance with the experience alike of experiment and practice as carried out in Europe," apparently unaware of the experience and practice of Edinburgh. In 1889, through the energy of Surgeon-Major Lawrie and the munificence of the Nizam, the famous second Hyderabad Chloroform Commission was formed. The *Lancet* accepted the princely offer of the Nizam of £1,000 towards the expenses of a representative on the Commission and selected Dr., now Sir, Lauder Brunton, F.R.S., in whom we all recognize one of the keenest intellects ever devoted to the study of pharmacology. Four hundred and thirty experiments were made on dogs and monkeys and the conclusions of the Commission were a complete endorsement of the Edinburgh teaching. "In every case respiration stopped before the heart, sometimes a long time before it." The final clause of the report reads thus: "The Commission has no doubt whatever that if the above rules be followed chloroform may be given in any case requiring an operation with perfect ease and absolute safety so as to do good without the risk of evil."

In publishing the report of the Commission the *Lancet* says: "It will be seen that the discrepancy between the views of the different schools arises from the fact that sufficient consideration has not been given to the conditions under which the chloroform is given. Although it may paralyse the heart if applied directly to it yet this condition does not occur in practice. . . . It is inhaled by the patient and when this is the case it stops respiration before the heart. The practical outcome of the research would appear to be that deaths from chloroform are not inevitable."

But the findings of the Commission were not accepted in London. In a short time physiologists have devised experiments which seemed to demonstrate errors in the Hyderabad methods, and accumulating statistics as well as frequent comments in the

medical press made it clear that whatever the state of affairs might be in India among dogs and monkeys, human beings died in England under chloroform from paralysis of the heart, and day by day ether supplanted chloroform.

I suppose that in the whole history of medicine no question has been argued more strenuously than this of chloroform anæsthesia. It bristles with paradox and contradiction. To one who had known by bitter experience the tragic suddenness of heart failure under chloroform, what a stupid and cruel paradox must have been the opinion that possibly enough chloroform had not been given. What could be more contradictory of the Hyderabad Chloroform Commission, or of the simple statement of Lister, "Wherever an anæsthetic is demanded chloroform is applicable," than the opinion of H. C. Wood in his "Therapeutics" that "the use of chloroform under ordinary circumstances is unjustifiable. It kills without warning so suddenly that no forethought or skill can guard against the fatal result. . . . Statistics seem to indicate a mortality of about one in three thousand inhalations and hundreds of unnecessary deaths have been produced by the extraordinary persistence in its use of a portion of the profession. It ought never to be employed except under special circumstances."

Among the conclusions of the Anæsthetics Committee of the British Medical Association occur the following statements about chloroform. There is "abundant evidence of primary cardiac failure," "Chloroform is most dangerous during early infancy;" also, that the respiratory complications after chloroform are more grave and persistent than after ether. Every one of these statements is met with a direct negative by the Edinburgh school.

To doubt an opponent's word, to misstate his case, to refuse his evidence is a summary, but not a satisfactory, way of conducting an argument, and each side claimed the field. To the man who had learned from Syme or from Lister how to give chloroform, and who had for years been giving it without difficulty, these attacks upon chloroform were curiosities of science. He knew chloroform was a dangerous drug, also that morphia, strychnia and mercury are dangerous. He readily admitted evidence of cardiac paralysis from chloroform but he believed he could avert it. He did not doubt there were many deaths under chloroform, on this point he freely accepted the statistics of his London colleague and could frankly congratulate him on not having a greater mortality, for he knew the London method was radically wrong and courted disaster. The cross-circulation experiments of Gaskell

and Shore were not to the point for it was not in that manner that chloroform was given in Edinburgh. And the ingenious experiments in which Waller demonstrated at the British Medical Association meeting in Montreal in 1897 the direct effect of chloroform vapour on living nerve tissue, were of interest to him chiefly in so far as Waller indicated that a certain percentage of chloroform vapour was safe. The statistics of the Anæsthetics Committee did not influence him, for he knew that they referred to an entirely different method of administration, and were practically not in the same category with his own. For instance, the average time for administering one ounce of chloroform as reported by the Anæsthetics Committee was over fifty-four minutes, while Lawrie's time was less than seven minutes.

A quarter of a century has passed since the conflict raged over the work of the Hyderabad Chloroform Commission and its echoes have not yet died away, for Lieut.-Col. Lawrie still wields a trenchant pen in defence of chloroform while its opponents are not ashamed to stigmatize the Edinburgh method as "antiquated, clumsy and dangerous."

In the interval a great deal of investigation has been carried on, new theories have been advanced as to the action of anæsthetics, new anæsthetic agents have been discovered, and entirely new methods have been elaborated. Many of these are on their trial. Some require expensive and cumbrous apparatus, well enough suited for hospitals but impossible for general practice. In our hospitals we look for, and generally find, all the recent and approved devices for anæsthesia and experts skilled in using them and with experience in selecting the best form of anæsthesia for each case or operation. But the majority of those who require anæsthetics have not the advantage of a hospital. Doctors in small towns and villages, to say nothing of the backwoods and the prairie and and the ship at sea, must have some convenient, portable and easily manageable anæsthetic and there are only two, ether and chloroform. Ether is at present undoubtedly the favourite because it is considered much safer. It has certain disadvantages. Its great volatility makes it unsuitable in hot climates. It is readily inflammable, a much larger quantity is required to produce anæsthesia, and what is more serious, it is admittedly dangerous in certain pulmonary, renal and cerebral conditions, so much more dangerous than chloroform that this much dreaded agent is preferred in such cases even by those who use ether habitually. Statistics indicate that death during anæsthesia is much

rarer under ether than chloroform but it has long been known that patients who have safely emerged from the influence of ether may die shortly afterwards from pulmonary complications such as cedema of the lung and pneumonia, or other conditions.

Chloroform is a much more powerful drug; the experiments of Waller showed it to be seven times more potent than ether (a very different thing from seven times more dangerous). When symptoms of danger arise during its use they are more urgent and startling than in the case of ether, and if death comes it comes with appalling suddenness, and there can be no doubt this is one of the reasons why ether has so largely superseded chloroform. Chloroform is much more pleasant, convenient and manageable than ether and, according to the Edinburgh school, is applicable in all cases. It has been found, however, in recent years that death may occur in the case of chloroform also after the patient has recovered from its immediate effects. Delayed chloroform poisoning, as it is called, may be met with in severe sepsis, as Mikulicz showed twenty years ago, and in the condition known as acidosis in which ether and nitrous oxide also may be followed by a fatal result.

It is a common statement that chloroform is six or seven times as dangerous as ether, that chloroform is fatal about once in 3,000 cases and ether once in 18,000 or 20,000. In the year 1893, Gurlt published a series of statistics from German practice which showed chloroform to be five times as dangerous as ether. The largest collection of statistics of which I have knowledge is that made by the German Surgical Society for the seven years 1891-97. There was a total of 330,000 anæsthesias with a mortality from chloroform of one in 2,075, and from ether of one in 5,112. This would indicate that chloroform is about two and a half times as dangerous as ether. Another set of statistics is that of Neuber for 1909 of 70,000 cases, with a chloroform mortality three times as great as that of ether.

If we accept these results there is nothing more to be said. If chloroform is twice as dangerous to say nothing of six or seven times, it should be abandoned. But it is quite evident that the medical profession is not convinced by these figures, for chloroform is still very largely employed. Statistics are fine material to juggle with and must be sharply criticized. Morgagni has warned us that observations must be pondered as well as numbered. We wish to know whether these deaths were all "on the table," or are post-anæsthetic deaths included. We wish to know why in

some cases chloroform, in others ether, was given. If ether is withheld from some patients and chloroform given instead, the statistics are vitiated. A surgeon who declines to operate on certain serious cases may compile a very successful record of operations at the expense of a colleague who does not refuse them. Then unless there has been a uniform method of giving chloroform the statistics as regards chloroform are not admissible. And unless that method has been the Edinburgh method, the Edinburgh school cannot recognize them, for it does not consider that chloroform has had a fair test. These German statistics are therefore inconclusive.

Now we have some statistics taken in London. In 1897, Dr. Probyn Williams found the mortality from ether in the London Hospital was one in 2,910. In 1900, Crouch and Corner kept a record of all the anæsthesias in St. Thomas Hospital in order to determine the question of ether pneumonia. There were 3,000 cases, 2,400 ether cases with 10 after-pneumonias, and one of these died. There were two other deaths from ether and this gives an ether mortality of one in 800. There was one death in the chloroform series of 600 cases. The point here is that in one of the leading London hospitals there was a mortality from anæsthetics of one in 750 cases, and an ether mortality of one in 800.

We have another set of statistics bearing on the question of pneumonia after anæsthesia. At the Frauenklinik in Erlangen, in the years 1887 to 1894, there were 338 laparotomies, with 21 cases of pneumonia. Of these 300 were chloroform cases, with 15 pneumonias, 4 of which were fatal. There were 38 ether cases and of these 6 developed pneumonia and 4 died. This gives a post-chloroform pneumonia rate of 5 per cent. and a post-ether pneumonia rate of nearly 16 per cent. It gives a chloroform-pneumonia mortality of 26 per cent. and an ether-pneumonia mortality of 66 per cent. The total mortality after chloroform was 1·3 per cent., and after ether 10·5 per cent. But all the mortalities recorded are from pneumonia. Let us suppose that the 4 deaths after ether pneumonia were the only deaths from ether, then the total ether mortality is 10·5 per cent, 105 per thousand! Now if chloroform is 6 times as dangerous as ether there should have been a chloroform mortality of 60 per cent. which means that 180 of the 300 chloroform cases should have died. If it were only twice as fatal as ether 63 should have died of the 300 cases. Even German patience would not endure this. As it is the total mortality is 23 per 1,000.

If there is any country in which we should look for good results from ether it is in America, where it is the favourite anæsthetic. It so happens that a few days ago my attention was drawn by my friend, Dr. Bruce Almon, to a report in the *American Journal of Obstetrics* for May of the present year, of a discussion on a paper on spinal anæsthesia read before the Obstetrical Society of Philadelphia. One of the speakers in favour of spinal anæsthesia says: "In my experience as resident and operator I have seen about eight deaths from ether and nitrous oxide. . . . Adding the experience of several of my associates we have collected 35 deaths from an estimated aggregation of 15,000 anæsthetizations." This is a mortality of more than one in 430. Of these deaths 27 were from ether and 4 from chloroform. This is a sad confession of incompetence and we do not wonder that the speaker is in favour of spinal anaesthesia, with which they have been so successful that of over 5,000 cases they have "only had ten deaths on the operating table," a mortality of 2 per 1,000!

This exposition of anæsthesia comes from Philadelphia, where Professor Wood declared that with a mortality of 1 in 3,000 the use of chloroform was unjustifiable.

The statistics which I have so far quoted do not by any means indicate that ether is many times safer than chloroform. But we have no information as to the manner in which the chloroform was administered. Let us now consider some statistics of the mortality from chloroform, when given in the right way.

I have said that the fatal case which made so profound an impression on us in Edinburgh in 1877 was the first for nineteen years. Considering the number of surgical cases in the Infirmary it is reasonable to suppose that there was an average of 1,500 chloroform administrations in each year and this would give about 30,000 cases without a death. Lister, writing in 1870 in Holmes' "System of Surgery," states that during the previous nine years there had been no deaths from chloroform in the Royal Infirmarys of Edinburgh and Glasgow. This will give about from 25,000 to 30,000 cases without a death. Lord Lister had one fatal case in his own practice shortly before he wrote his last article on anæsthesia in the third edition of Holmes' "Surgery." By that time he had had thirty years' experience of chloroform, and it is a reasonable estimate that he must in that time have seen about 18,000 or 20,000 before this death occurred.

Lieut.-Col. Lawrie, the veteran protagonist for chloroform, states that "the late Mr. Syme's cases and my own form a con-

tinuous series amounting to more than 45,000 cases . . . extending from 1847 to 1890 in which the respiration alone was taken as a guide, without one death resulting."

It is on record that Billroth had used chloroform 12,500 times before he met with his first accident, Bardeleben of Berlin had 30,000 cases, Nussbaum of Munich 40,000 cases and Hunter McGuire, the well-known surgeon of Stonewall Jackson's army corps, had 28,000 without a death. I am aware that these statistics have been called antiquated. So is a fossil, but a fossil is a fact.

I have just received from my friend Dr. Lyall, director of the Mission Hospitals of the English Presbyterian Church in Swatow, China, the annual report for 1913, being the jubilee year of the Hospital. He states that during these fifty years there has only been one death from chloroform, which is the only anæsthetic used. This case occurred twenty years ago. He is unable to state the total number of cases, but, as during the last ten years there has been an average of 500 a year, it is probably well within the mark to say that there have been 10,000 cases with one death. And he has never seen post-chloroform poisoning.

It is evident that we have no uniform basis for a statistical inquiry. Compare the Erlangen chloroform mortality (from pneumonia alone) of 13 per 1,000 with Lieut.-Col. Lawrie's 45,000 cases without a death. Compare the estimate of Wood that chloroform is fatal in one out of every 3,000 cases, with the admission of one death in 600 at St. Thomas Hospital.

Of greater value than any laboratory experiments on dogs or rabbits, of much greater value than a confusing and conflicting array of statistics, are the matured opinions founded on long experience, of those who have used chloroform successfully. Lister agreed with Syme that any case fit for operation was fit for chloroform. Mikulicz, whose great experience and sound judgment placed him in the front rank of modern surgeons, did not accept the teaching of Gurlt's statistics. He had observed the post-operative risks of ether and deliberately chose chloroform. In the opinion of Professor Caird, of Edinburgh, chloroform is "the best general anæsthetic." In a letter I have lately received he says: "Chloroform requires greater care and attention in its administration. My only objection to its use is in young toxæmic children, but I also think that the danger of post-chloroform poisoning is a little overrated and in other than urgent cases can be prevented with suitable care. Nor is ether free from the same

danger. Again the diagnosis is not always clear and septic conditions mimic it. Its simplicity and ease of management commend chloroform most highly. Observance of the old Edinburgh rule, and strict attention, that is all. I feel strongly that ether has the vogue because its immediate risks in the hands of the man who cannot bear responsibility are less than with chloroform. Chloroform has been studied too much from the cardiac and pulse side and not sufficiently from the respiratory-centre side."

The dread of direct cardiac poisoning is what prevents many from using chloroform. But cardiac disease is no bar to the use of chloroform. The clearest statement on this point is made by Lister. "If a person with known cardiac affection decides to place himself in the hands of the surgeon, so far from being unsuited for the anæsthetic he is before all others the man who stands most in need of its protecting influence." Huchard, the eminent French clinician, does not admit that either heart disease or angina pectoris is a contra-indication to the use of chloroform, and in this opinion Berger and Brouardel agree with him. He lays great stress on the point that in heart disease the anæsthesia should be absolutely complete.

It may not be generally known that while he was in general practice, Dr. James Mackenzie, the eminent authority on the heart, was surgeon to the hospital at Burnley and had a large surgical experience. If I am not mistaken he was led to take up this surgical work because he found so widespread a dread of anæsthesia that it was difficult to induce patients to submit to operation. He had full confidence in chloroform and used it, and is to this day an advocate of this "dangerous drug."

There are few cases which cause greater anxiety as to the effect of an anæsthetic than inflammatory cerebral conditions, and there is no greater master of brain surgery than Sir William Macewen, who says of such cases: "The anæsthetic ought to be chloroform—never ether." There is no authority on anæsthesia who is heard with greater respect and confidence than Dr. Dudley Buxton of London. He advocates the dosimetric system and the Vernon Harcourt inhaler, and he assures us that "by their use the dangers of chloroform are abolished or so far lessened as to be negligible." Levy's work shows that probably the only cause, of any moment, of death under chloroform is ventricular fibrillation and that it can be prevented by steadily maintaining a full degree of anæsthesia.

I have been giving chloroform and watching its administra-

tion for forty years and I have not yet seen a death from chloroform. I do not think chloroform or any other anæsthetic is absolutely safe, and I approach every case with the feeling that this may be one of idiosyncrasy, and the recollection that chloroform, potent for good, is also potent for evil.

In emergencies of my practice I have often had to entrust its administration to unqualified persons, I have had anxious moments, many of them false alarms, most of them due to insufficient chloroform, and in the few cases in which real danger seemed to threaten it was through artificial respiration that the patient was restored to safety. I have always used Duncan and Flockhart's chloroform, and as a rule that prepared from methylated spirit. We often used it in Lister's wards and I see that Sir Frederic Hewitt, one of the leading London anæsthetists, recommends it.

I believe that chloroform when properly given is the most convenient, most easily manageable, most universally applicable and safest of anæsthetics.

*Discussion**

Dr. Primrose stated that he had given his first anæsthetic, before he studied medicine, for Dr. Stewart. He also said that in the Old Country the surgeon shared the responsibility. This has a great advantage when we have to deal with unskilled anæsthetists. Instruments of precision tend to make the administration more dangerous. Such methods are complicated and the apparatus not suitable for being carried about. He asked about the use of anæsthetics in diabetes.

Professor Fraser Harris: Perhaps some light can be thrown on cases of early death under chloroform, i.e., in very light chloroform anæsthesia, if one considers the behaviour of rabbits and cats under chloroform. Whereas it is easy to keep up prolonged chloroform anæsthesia in the cat and difficult to induce in it cardiac fibrillation (delirium cordis), it is not at all easy in the rabbit to maintain chloroform anæsthesia, and sudden death from cardiac fibrillation is common. In other words, small quantities of chloroform are more poisonous to the rabbit heart than to the cat heart. In an extended (but unpublished) research years ago in Glasgow University we failed to find fatal ventricular fibrillation at all common in cats, whereas it is so in rabbits. Levy, of

* See also the discussion on Dr. Nagle's paper, p. 1051.

London, believed that even in cats it is a fairly frequent fatal occurrence.

Now it is probable that the difference in response of rabbit heart-protoplasm and cat heart-protoplasm is due to some unknown chemical difference towards chloroform in the two types of heart respectively. Is it not possible that sudden death in the human may be due to this same intolerance of slight amounts of chloroform which may be called, when met so comparatively seldom, an idiosyncrasy towards chloroform? It may also be possible that a psychic factor coöperates with this chemical susceptibility to induce the cardiac fibrillation which is fatal in certain cases of light chloroform anæsthesia in man.

Apparently with chloroform, as with so many other drugs, the effects on cardiac protoplasm are different according as the dose is small or large: a large dose kills by toxic immobilisation, by fatal motor paralysis—the drug having too firmly combined with the myoplasm, whereas in some cases which cannot be detected beforehand, a small dose irritates without immobilising, but induces a state of muscular fibre incoördination which incapacitates the heart from effectively emptying itself, thus letting the cerebral blood reserve fall to a fatal level.

Dr. Hunter claimed that the important point was mainly that the careful attention of the anæsthetist is necessary. The fee ought to be more than \$5.00.

Dr. Stewart, in reply, stated that the most of his work was in private houses, and that he would recommend the anæsthetic the anæsthetist is most familiar with. Chloroform should not be given too slowly. Lawrie's time was seven minutes to one ounce.

A SMALLPOX hospital is to be erected at St. Thomas. The matter has been under consideration for the past two years and the frame building which has served as an isolation hospital is quite unfit for habitation. A Roman Catholic hospital is also to be erected at St. Thomas. The cost of the proposed building is estimated at from \$60,000 to \$100,000. The plans are being prepared for a smallpox hospital at Brantford.

X-RAY EVIDENCES OF GASTRIC CARCINOMA

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ALTHOUGH carcinoma of the stomach was one of the first targets of x-ray effort in the field of internal medical diagnosis, yet still one occasionally hears, even from lips which should be authoritative, expressions of doubt as to the reliability of the Roentgen method, especially with reference to the exclusion of malignant disease. For more than ten years the bismuth method has been employed as an aid in the study of gastro-intestinal disorders, and the literature of roentgenology is richly supplied with contributions relating to carcinoma of the stomach. Yet in view of a certain amount of distrust, and even lack of knowledge, concerning the value of this diagnostic means, the writer ventures to submit a summary of the indications and special advantages attending its use. In the space devoted to the Scientific Exhibit will be found a series of radiograms illustrating the value of the bismuth study of the colon with special reference to the diagnosis of bowel cancer, and its differentiation from various other conditions which are radiologically similar. This paper will be restricted to a consideration of the Roentgen evidences of carcinoma of the stomach.

When a suspension of some salt opaque to the Roentgen ray is introduced into the empty stomach, the lumen of the stomach, if normal, presents a characteristic complete shadow, subject to certain normal indentations. These normal indentations are as follows:

(a) The splenic notch, usually present at the upper border of the greater curvature, and due to the pressure of the spleen against

the greater curvature. One may judge thereby as to the size of the spleen.

(b) The changes in shape of the stomach shadow produced by the peristaltic waves are varying but characteristic, and are easily recognized under the fluorescent screen or by a series of radiograms.

(c) The pyloric sulcus, the break between the shadow of the stomach and the shadow of the first portion of the duodenum (variously termed *bulbus duodeni*, *duodenal bulb*, *stomach cap*, *pilleus ventriculi*), is normally about one centimeter in width.

Excluding these normal indentations in the shadow of the stomach, any defect in the shadow must be regarded as suspicious of malignancy, and its identity determined. In favourable subjects where the fluoroscopic image is clear, the screen study of the contour of the gastric silhouette is very satisfactory, although the writer for the sake of absolute safety from criticism usually makes several radiograms as a matter of record, even in the cases satisfactorily studied by the screen method. In heavy patients, ten or twelve radiograms usually suffice. On a number of occasions unsuspected gall and kidney stones have been discovered in this manner, and in patients too heavy for favourable fluoroscopy the serial radiograms have made possible the discovery of relatively early carcinoma. The reason for the use of the term "relatively early" will appear later in this paper in the discussion of the possibility of negating a diagnosis of carcinoma.

In the effort to render possible an earlier diagnosis of gastric cancer than he had till then been able to make by the recognition of filling defects in the stomach shadow, Holzknacht grouped a number of radiologic and clinical signs under various heads each one a "symptom-complex." The following symptom-complex relates to gastric carcinoma: "(1) Bismuth residue six hours after the Rieder meal. (2) Normal shadow of the stomach seen on the screen. (3) Achylia. Diagnosis: A small carcinoma of the pylorus. In the symptom-complex noted above, the reasoning is as follows: Achylia is always associated with hypermotility as long as the pylorus is free, the stomach emptying in two or three hours. Therefore, a residue after six hours must mean an organic obstruction, because spasm of the pylorus is never associated with achylia, but with hyperacidity."

The writer refers to the above symptom-complex of Holzknacht, only to warn against its unreliability, for while it is true that in a certain number of cases such reasoning might lead to the recognition of an early pyloric neoplasm, the same reasoning in many other

cases will lead to ignominious failure. The writer has seen cases fitting perfectly into the above symptom-complex which at operation proved to be not malignant, but due to adhesion bands, pressure of extra-ventricular masses or gall-stones; and sometimes no pathology at all could be demonstrated at operation. The writer is thankful that he was able to test out this matter in a manner which did not reflect unfavourably upon himself or the surgical staff through whose courtesy the rigid check-up was possible. Thanks to a routine which requires that all patients about to be subjected to laparotomy in the surgical department of the Battle Creek Sanitarium be first submitted to a thorough bismuth meal examination of the entire gastro-intestinal tract, the writer has been able to check at operation the *x*-ray findings in hundreds of cases. For instance, in a patient operated upon for uterine fibroids, the surgeon as a routine procedure at operation examines and records the condition of the gall-bladder, the pylorus, the duodenum, the appendix, the terminal ileum, etc., so that, without working inconvenience to anyone, the preoperative *x*-ray findings, negative or positive, even though not directly relating to the object of the operation, are corrected, and future errors minimized. From his experience, thus secured, the writer seldom relies upon the symptom-complex method of recognizing gastric carcinoma.

As a matter of fact, the symptom-complex method is unnecessary, since serial radiography and, when necessary, cinematography afford us a means of studying intimately the contractility of the entire gastric wall, and of excluding even very small indurating lesions. The writer would not presume to state that carcinoma of the stomach could not exist in a lesion too small for detection by carefully conducted radiographic search, but he will place on record the statement that up to the present moment, since the time he was fitted by equipment and experience to make these thorough studies, not a single case of carcinoma of the stomach to his knowledge has been revealed at operation where previous *x*-ray examination had failed to show an organic lesion. There are cases, particularly the early cases, where, from the *x*-ray examination alone, one may only say that there is a mass, without venturing an opinion as to whether it is due to ulceration with inflammatory reaction or to malignancy. One must also think of syphilitic and sarcomatous lesions, and the possibility of having to deal with a tuberculous mass. The writer has in one instance successfully diagnosed a tuberculous ulcer of the stomach.

A careful study of the gastric silhouette by means of the

fluoroscope and a series of radiograms, should then permit a positive or negative opinion as to the presence of a filling defect. This filling defect may be characteristically irregular, indented as by finger-prints, or otherwise definitely suggestive of carcinoma without the corroboration of other clinical findings, but as a routine all the evidences of clinical research, including the Abderhalden test, will be added to the x-ray findings if one would make an ideal study of the case.

The gross filling defect produced by a tumour of the lower half of the stomach on the greater or lesser curvature is usually obvious. The characteristics are as follows:

1. Permanence. The filling defect is of the same size, in the same location, and of the same identical shape and outline at the various observations.

2. The filling defect usually coincides with a point of tenderness on pressure, or, if the entire epigastrium be tender, with the point of most marked localized pressure-pain. The absence of a pain-point does not at all negative the seriousness of a filling defect.

3. Screen examination as well as serial plate examination will show that the peristaltic waves fade out as they reach the region of the filling defect; and, provided it is not too near the pylorus, the waves reappear beyond the defect, proceeding to the pylorus. An inflammatory mass associated with ulcer may give rise to this same phenomenon.

4. When the lesion is near the pylorus, even though not directly producing stenosis, antiperistaltic waves may be observed. These are seldom recognized on plate examination, but if repeated fluoroscopic observations are made, at some time or other in every case of organic pyloric obstruction antiperistaltic waves are likely to be observed; when seen, they are pathognomonic of an organic lesion. Here again the evidence does not necessarily speak for malignancy, but with a filling defect, antiperistalsis is exceedingly suggestive of malignancy.

5. Unless there exists actual mechanical obstruction due to narrowing of the lumen of the stomach, there is usually early clearance of the stomach contents in a manner characteristic of achylia. This is a point in the differential diagnosis between benign and malignant hour-glass stomach. In ulcer cases the emptying time of the stomach is usually normal or even prolonged. Even in pyloric carcinoma, there may be a pyloric insufficiency, the action of the sphincter being hindered by the induration of the gastric walls before the extension of the tumour growth has produced

actual stenosis. In such cases, even though a moderate grade of gastric acidity still exists, clearance of the stomach contents may take place with unusual rapidity. As soon as pyloric stenosis is produced, however, the symptoms are those of gastrectasis. The peristaltic waves are increased in depth, at times almost cutting the gastric shadow in two; the waves are increased in frequency, and begin higher up in the stomach; and if one be fortunate, antiperistaltic waves may be recognized, especially after digital manipulation of the stomach through the abdominal wall, or after the patient has taken several gasping deep breaths. Antiperistaltic waves are best seen an hour or two after the ingestion of the meal.

The determination of the extent of a gastric tumour and the probability of adhesions to neighbouring organs, as well as the identification of pain-point on pressure, can only be accomplished satisfactorily by palpation under the fluorescent screen. A wooden spoon of special design is very helpful in this manipulation, though in the writer's opinion it is practically safe to use the hand for this purpose provided it is protected with a heavily leaded glove. If there are evidences of fixation to neighbouring organs, the probable extent of the tumour may be inferred.

Ordinarily when the tumour does not produce pyloric stenosis, the test meal will pass quickly through the stomach and quickly through the small intestines into the colon. If the bismuth, having reached the small intestine, is gathered here and there in large ropy masses, arriving at the cæcum later than would be expected in such a case, one may, in the presence of definite evidences of gastric carcinoma, properly suspect a peritoneal carcinomatosis. The writer has seen this in several cases of infiltrating scirrhus carcinoma of the stomach, one of which is shown in the accompanying illustration. A study of the contour of the upper surface of the liver—the phreno-hepatic shadow—may in advanced cases of carcinoma give information as to whether or not metastasis has occurred into the liver. The contour of the right diaphragm is easily studied by the screen method, the patient and the tube being variously adjusted in order to show up the entire upper surface of the liver.

Symptoms of esophageal obstruction are frequently found in cases of gastric carcinoma. These symptoms may be due to the backing up of food into the esophagus from a stomach whose lumen is much reduced through carcinomatous involvement or through enlargement of the liver owing to metastasis. This is not an uncommon observation. The food column in the esophagus may,

during ingestion, rise higher than the base of the heart, but usually the pabulum passes into the stomach after a few moments. In cases of actual invasion of the cardia, the usual signs of esophageal obstruction are present.

In this connexion it is proper to urge the importance of making a complete gastro-intestinal Roentgen examination in every case of suspected carcinoma of the stomach, in order to rule out, if possible, extension to or metastatic involvement of other organs. The finding of metastases, especially those occurring in the pouch of Douglas, may permit a differentiation between a filling defect due to ulcer and one due to carcinoma. It should be more generally recognized by radiologists that examination of the lower bowel may reveal evidences of the co-called "Douglas metastases," though on account of the easy accessibility of the rectum for digital exploration, physical examination is also very useful.

In differentiating between benign cicatricial stenosis of the pylorus and stenosis due to malignancy, the writer has found it of especial value to make the screen and plate examination with the patient lying on the right side, the tube behind the patient, and the screen or plate held vertically against the abdomen. In this manner it is possible to bring out the finest detail of the pyloro-duodenal region, often to better advantage than with the patient in the prone position, plate anterior. Unless the pyloric carcinoma has supervened upon an old stenosing ulcer, it is likely that the stomach will not be greatly dilated in pyloric cancer, for the reason that the malignant process has advanced too rapidly to permit extensive dilatation. In benign ulcerous stenosis, on the other hand, including those cases where the ulcer has later degenerated into malignancy, the long duration of the process permits enormous increase in the size of the stomach.

Extra-ventricular tumours, unless intimately adherent to the stomach, may be differentiated through the fact that the normal gastric peristalsis is not interfered with. This is best determined by fluoroscopy, although the expenditure of a number of plates may afford the same information.

In differentiating between hour-glass due to ulcer and that due to carcinoma, there are several important points to be observed. Ulcer and carcinoma show differences in position, length and outline of the connecting canal between the upper and lower sac, as well as in the relative size of the two sacs. The ulcer or its scar is almost always located on the lesser curvature. The writer has seen but one case of ulcer high up on the greater curvature, in that

instance penetrating into the spleen. The contraction associated with lesser curvature ulcer always occurs toward the lesser curvature, the seat of the shriveling agent. The connecting canal between the upper and the lower sac is located near the lesser curvature, and its outlines are usually nearly smooth and regular. There is often a slight projection of the stomach shadow at the site of the ulcer, owing to excavation attending the ulcer process. In ulcer only a limited portion of the lesser curvature is pulled over toward the ulcer; the narrowness seldom affects the greater curvature for more than half an inch. In carcinoma, on the other hand, although the tumour usually starts on the lesser curvature, it produces there a light space (filling defect), and the connecting channel between the upper and the lower sacs is located near the greater curvature. When the malignant hour-glass is produced by an annular carcinoma, the lumen between the two sacs occupies a median position, lying in the axis of the stomach. The length of the carcinomatous narrowing is greater than with ulcer, unless the ulcer has been attended by perigastric adhesions of considerable extent, or unless the ulceration has been multiple. The contour of the filling defect is irregular and often indistinct, because the wall of the stomach is infiltrated. In ulcer the pathological findings occur opposite the site of the filling defect, while in carcinoma there is resistance, often pain, and sometimes a palpable tumour corresponding with the filling defect.

Differentiation between the hour-glass of ulcer and of carcinoma is helped by a consideration of the relative size of the two sacs. This relative size depends upon the relative position of the hour-glass constriction to the pylorus, upon the degree of constriction, and upon the condition of the pylorus. The greater the constriction and the nearer the constriction to the pylorus, the greater will be the size of the upper sac. The size of the lower sac, which is of greatest differential diagnostic importance, depends upon the permeability of the pylorus. A large lower sac exhibiting vigorous peristaltic waves speaks for ulcer, owing to the tendency of the pylorus to abnormal spastic contraction in the presence of ulcer; whereas in carcinoma the absence of free hydrochloric acid with resulting relaxation of the pylorus does not favour development of a large lower sac. Hence, we may conclude that in hour-glass stomach, when the two sacs are markedly different in size, and especially when the lower sac is small, this fact speaks for carcinoma.

Holzkecht was one of the first to call attention to the possibility of utilizing the x-ray examination to draw conclusions as to the resectability of carcinoma of the stomach. Holzkecht is

careful to use the word resectability rather than operability, because metastases to glands can hardly ever be suspected, and adhesions are recognized only with a relative degree of certainty. According to Holzkecht and Haudek, in resectable cases the normal hook form of the stomach is usually preserved, while the types of tumour cases which are not resectable show the diagonal short small form of the stomach. Even very large tumours requiring a subtotal resection are usually still resectable if they preserve the hook form. Another symptom of resectability is the preservation of the distensibility of a considerable portion of the stomach. One should not neglect study of the phreno-hepatic shadow and of the remainder of the gastro-intestinal tract, especially the pouch of Douglas, before reaching conclusions as to operability.

In a certain class of cases where the clinical examination warrants a reasonable suspicion of malignancy, and where the *x*-ray findings are negative, it is wise to repeat the *x*-ray examination after four or five weeks. In a few cases the second examination has revealed evidences of malignancy not made out earlier; in the majority of cases the negative diagnosis will be strengthened. One of the most useful purposes of the *x*-ray examination in this class of cases, as well as in cases of inoperable malignancy, is to save the patient from an unnecessary exploratory operation.

In spite of the assurance which the writer feels is often warranted in making a positive statement as to the absence of malignant disease of the stomach, it is a striking observation that radiologists rarely diagnose an *early* carcinoma of the stomach. It is probably very rare indeed that a case of truly early carcinoma is seen at operation. That the application of the diagnostic points described in the foregoing pages is adequate is attested by the fact that not once in the hundreds of operated patients already mentioned was carcinoma found by the surgeon when the pre-operative *x*-ray examination had failed to find an organic lesion; yet not more than a dozen of the gastric malignancies could really be considered as early. With malignant disease of the stomach, the morbid sensations produced by the affection are of such indefinite nature that the patient seeks medical advice only when it is too late for an early diagnosis. And, as Huerter says, even if during the first examination the suspicion of a malignant tumour is forced upon the average examiner, he is seldom willing to express a positive opinion until the programme of watchful waiting has been pursued too long for an early diagnosis. Why not make the *x*-ray test a routine procedure in the examination of every case presenting gastro-intestinal symptoms?

THE COMPLEMENT FIXATION TEST IN
GONORRHOEA

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THE phenomenon of complement fixation, now generally known as the "Bordet-Gengou" reaction, has been extensively applied as a means of assistance in the clinical diagnosis of various infectious diseases. This reaction depends on the following factors: (1) *Complement*, a substance present in all blood sera and destroyed by heat at 56°C.; (2) *Amboceptor*, a substance present in the blood serum of an animal which has been immunized against (3) some foreign protein, in this case red blood cells of an animal of a different species. If two sera containing certain definite proportions of these two substances are placed together in the presence of the red blood cells of an animal of one species which have been used to immunize another animal of a different species in the preparation of the amboceptor, the result will be a destruction of these red cells—hæmolysis. It is upon this hæmolysis that the complement fixation test depends.

It is known, however, that under certain conditions the presence of two other substances will inhibit this hæmolysis. These are (4) "antigen" and (5) antibody. Antibodies comprise certain substances formed in the blood serum of individuals suffering from a given disease, and are produced as the result of the specific infecting agent. The antigens for these antibodies are, strictly speaking, all substances (of proteid nature) which when introduced into an animal excite the production of antibodies. By confusion of ideas the name to-day is also applied to substances which have some of the chemical characteristics of the organism or agent causing any particular disease. Thus we speak of heart or liver extract as a syphilitic antigen: it having been found that these can replace the syphilitic virus in the Wassermann reaction.

If antigen and blood serum containing its specific antibody are added to complement, and these added to amboceptor and red blood cells, then the antibody and antigen combine with comple-

This report, from the Pathological Laboratory of the Montreal General Hospital, was prepared in connexion with the A. A. Browne Fellowship in Medicine in McGill University, and was read at the annual meeting of the Canadian Medical Association, St. John, N.B., July 8th, 1914.

ment in such a way as to destroy its power to unite with amboceptor to cause hæmolysis. This union of the antigen and antibody with complement with the resulting inhibition of its power to destroy red blood cells is called *fixation* or *deviation of complement*, and when present in a test in which a suspected serum is used instead of a known antibody, constitutes a positive reaction.

This is a somewhat brief explanation of the conditions required for this phenomenon. Each step requires scrupulously careful preparation. It has been found by experiment that fresh guinea-pig serum best fulfills the requirements of a complement. Blood serum of a rabbit which has been immunized against sheep red blood cells by repeated intravenous injections of small quantities of fresh sheep red blood cells constitutes or, more accurately, contains one of the best amboceptors. Sheep red blood cells must of course be used in the complement fixation test with a sheep blood amboceptor because the action of the latter is specific. Antigen varies with the disease in question, but is usually an extract of the organism which causes the disease. The antibody is of course the unknown, and a positive complement fixation test proves its presence in the serum of the suspected individual and therefore the presence of the suspected disease in the individual.

The best known and most extensive application of complement fixation is the Wassermann test in syphilis. It has also been applied to various other infectious diseases with varying results. Muller and Oppenheim were the first to record the presence of the complement fixation phenomenon in gonorrhœa. They found fixation of complement in a case of clinically definite gonorrhœal arthritis, using a treated culture of gonococcus as an antigen. They controlled their experiment with the serum of a known negative case.

It was found, however, that only certain strains of gonococci used as antigens seemed to have the power to fix complement in known cases of gonorrhœal infection. This led to the work of Geague and Gorrey,¹ Wollstein,² and Watabiki³ whose combined work proved that strains of gonococci varied in their antigenic power to bind complement. In other words, an antigen prepared from a strain of gonococcus binds complement strongly when tested with the serum of an animal which has been immunized against the same strain, but only weakly or not at all with the sera of animals immunized against others trains of gonococcus. Schwartz and McNeill,⁴ working along this line, developed a technique using an antigen prepared from several strains of gonococcus; from the use of these polyvalent antigens they report much better results.

During the past few months the gonococcus complement

fixation test, using a monovalent antigen and also a polyvalent antigen similar to that recommended by Schwartz and McNeill, has been performed as a routine in connexion with the serological department of the pathological laboratory of the Montreal General Hospital. The technique is given here in detail inasmuch as careful preparation of the reagents is essential for the best results.

Complement. A guinea-pig is bled twelve hours before the tests by cutting the carotid arteries. The blood is allowed to clot, put on ice, and immediately before use the serum is withdrawn. It is cleared by centrifugation if any red cells are present.

Amboceptor. Four or five injections of from 2 to 5 cc. of a 50 per cent. solution of fresh sheep red blood cells in normal saline (.85 per cent.) are made into the ear vein of a rabbit at intervals of five days. Ten days after the last injection the serum is titrated to determine its value as an amboceptor. If suitable, the rabbit is bled, the blood is allowed to clot, the serum withdrawn, then inactivated by heating at 56°C. for thirty minutes to destroy its natural complement, placed in ampoules and stored on ice.

Red Blood Cells. Fresh sheep blood cells are washed with saline and centrifugated several times until the supernatant fluid is absolutely clear.

Serum to be Tested. Five cc. of blood is drawn from the vein of the patient, allowed to clot, and the serum withdrawn. The serum is cleared by centrifugation and inactivated by heating at 56°C. for thirty minutes in order to destroy the complement present.

Antigen. Cultures of gonococci are grown on hydrocele fluid dextrose agar for twenty-four hours and washed off with sterile distilled water. The suspension is centrifugated, mixed with sterile distilled water, and the supernatant fluid removed. This is repeated three or four times, to remove extraneous material derived from the media; 50 cc. of sterile distilled water is then added to each 0.5 gm. of sediment and the suspension enclosed in sealed tubes and placed in water at 56°C. for half an hour. It is kept in a warm place (incubator) for ten days, being shaken for about ten minutes daily in a vaccine shaker. It is then centrifugated and the supernatant fluid withdrawn to be used as antigen. A drop of carbolic acid or lysol is added to prevent contamination. To make a polyvalent antigen several monovalent antigens are mixed.

Titration of the reagents are necessary to establish their value. Complement has been found to vary frequently and is therefore titrated before every series of tests. Amboceptor and antigen as a rule, when kept on ice, do not tend to lose their properties, but as a precaution should be titrated frequently.

In the system we have employed the tests and titrations are made on a basis of a total quantity of 2·5 cc. in each tube. In both the quantity of red cells used is 0·5 cc. of a 2·5 per cent. emulsion of fresh red cells in normal saline. In the tests alone the amount of amboceptor and of complement required in each tube is made up to 0·5 cc. with saline in each case for convenience in handling the pipettes.

Titration of Complement. Ten per cent. complement in saline is used in this titration. The complement value of guinea-pig serum has been found to vary considerably especially in young pigs. In the system here employed, the unit has been found to vary between 0·3 cc. and 0·15 cc. of a 10 per cent. solution; therefore these limits must be exceeded in the titration. In the titration of complement which is made every day before the tests proper the unit of amboceptor used on the previous day is taken as the standard. The following is a table of the titration:

Tubes.....	I.	II.	III.	IV.	V.	VI.	VII.
Amboceptor.....	1 unit in each tube.						
Complement, 10%....	0·5 cc.	0·4 cc.	0·3 cc.	0·25 cc.	0·2 cc.	0·15 cc.	0·1 cc.
Red Blood Cells.....	0·5 cc. in each tube.						
Saline.....	Add sufficient to make the total quantity 2·5 cc. in each tube.						

Incubate in a water bath at 37°C. for thirty minutes. The least amount of complement causing complete hæmolysis is to be taken as the unit of complement.

Titration of Amboceptor. With this system it has been found that using a 1 to 150 or 1 to 200 dilution of amboceptor in saline with one unit of complement the least amount causing complete hæmolysis is usually in the neighbourhood of 0·1 cc.; although not necessarily so, as it depends entirely on the strength of the amboceptor. The actual titration in the case of an amboceptor known to be approximately this strength would be as follows:

Tubes.....	I.	II.	III.	IV.	V.	VI.	VII.
Amboceptor, 1 to 150.	0·3 cc.	0·25 cc.	0·2 cc.	0·15 cc.	0·1 cc.	0·075 cc.	0·05 cc.
Complement, 10%....	1 unit in each tube.						
Red Blood Cells							
(Sheep) 2·5%	0·5 cc. in each tube.						
Saline.....	Add sufficient to make the total quantity 2·5 cc. in each tube.						

Incubate in a water bath at 37·5°C. for thirty minutes. The unit of amboceptor to be used in the test is represented by the tube containing the least amount which causes complete hæmolysis.

Titration of Antigen. This is necessary to determine the antigenic value of the extract and also to detect the presence of anti-complementary properties. In a suitable antigen there should be a wide margin between these two. Anticomplementary properties should not be present in less than twice the amount of antigen used

in the tests; otherwise there would be the danger of false positive reactions. A 20 per cent. solution of antigen in normal saline is usually used in preliminary determination of its antigenic properties, although this may be found to be too concentrated, in which case a weaker solution is used. The following table gives the usual routine titration:

Tubes.....	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Antigen, 20%.	0.05 cc.	0.1 cc.	0.2 cc.	0.4 cc.	0.6 cc.	0.8 cc.	1 cc.	1.2 cc.	1.4 cc.
Complement, 10%.....	2 units in each tube.								
Known Posi- tive Serum..	0.2 cc. in each tube.								
Saline.....	Add to 2 cc. in each tube.								

Incubate in water bath at 37.5°C. for thirty minutes, then add—

Amboceptor... 2 units in each tube.

Red Blood

Cells 2.5% 0.5 cc. in each tube.

The presence of antigenic qualities is determined by the presence of inhibition of hæmolysis, and in a good antigen this should be present in the second or third tube.

To determine the anticomplementary properties the above test is repeated, omitting the known positive serum. This is an important titration, and in a suitable antigen hæmolysis should be complete in the tube representing double the unit of antigen chosen for the test.

The routine usually followed each day when tests are made is:

1. Titration of complement.

2. Titration of antigen.

3. Tests proper. Here three tubes are used—one as a control without antigen and the other two with different quantities of antigen. The unit of antigen used is usually one half the greatest amount showing complete hæmolysis in the anticomplementary titration. A known positive and a known negative serum are included in each series of tests as additional controls.

The following is a table of the test:

Tubes.....	I.	II.	III.
Suspected Serum.....	0.2 cc. in each tube.		
Complement.....	2 units made up to 0.5 cc. in each tube.		
Antigen.....	None	$\frac{2}{3}$ unit	1 unit
Saline.....	Add to make total quantity 1.5 cc. in each tube.		

Incubate in water bath at 37.5°C. for thirty minutes and then add—

Amboceptor..... 2 units made up to 0.5 cc. in each tube.

Red Blood Cells 2.5 %..... 0.5 cc. in each tube.

Return to water bath at 37·5°C. for thirty minutes.

Instead of the last step in the above table the red cells may be sensitized synchronously with the first part of the test by adding equal quantities of amboceptor (two units made up to 0·5 cc. with saline) and red cells. The mixture is incubated in the water bath at 37·5°C. for half an hour. One cc. is then added to each tube and the tubes returned to the water bath. The sensitizing of the red cells has the effect of hastening the reaction.

The method of reading the results is of importance. This is done when hæmolysis is complete in the controls. A strong positive reaction consists in complete inhibition of hæmolysis. For diagnostic purposes it is doubtful if it is wise to return a report of a positive reaction if there is less than 50 per cent. inhibition of hæmolysis, which one would term a weak positive reaction.

Results

Tests were made on three hundred and seventy-five human sera in two hundred and eighteen of which the presence of a gonorrhœal infection was known or suspected. Six strains of gonococcus were used in the polyvalent antigen.

The results may be classified as follows:

1. Acute urethritis, with symptoms present for ten days or less, and with gonococci in smears: 21 cases, all negative.
2. Acute urethritis of three to six weeks duration: 17 cases; 9 weakly positive, 8 negative.
3. Chronic urethritis of over six weeks duration: 22 cases; 13 positive, 9 negative.
4. Epididymitis: (a) 19 cases with definite history of urethritis; 15 positive, 4 negative. (b) 4 cases with no history of urethritis, all negative. Two were operated on later and found to be tuberculosis. One gave a positive Wassermann reaction.
5. Prostat-vesiculitis: 40 cases the majority of which were chronic and resisting treatment; 22 positive, 18 negative.
6. Arthritis: (a) Acute, with no history of urethritis and clinically of type of acute rheumatic fever; 10 cases, all negative. (b) Acute with history of recent urethritis; 8 cases, all positive. (c) Chronic:

Eight cases (female), clinically gonorrhœal arthritis; 6 positive, 2 negative.

Eleven cases, with no definite history or indication of gonorrhœa; 3 positive, 8 negative.

7. Colliculitis: diagnosed by urethroscopic examination; 7 cases, all negative.

8. Stricture: 3 cases, all negative. These cases had not had symptoms of gonorrhœa for over ten years previously.

9. Conjunctivitis: 1 case of acute conjunctivitis of the right eye showing gonococci in smears, gave a positive reaction.

10. Salpingitis: 23 cases, showing symptoms of acute or chronic inflammation of the Fallopian tubes; 14 positive, 9 negative. Of these negative cases 4 at operation were found to be tuberculous; 1 showed both tubercle bacilli and gonococci in smear, and a culture of the latter was obtained.

In addition to the above, sera were examined from eight cases in which gonococcus vaccine had been administered. These all gave positive reactions.

In one hundred and thirty sera the tests were performed using both a monovalent and a hexavalent antigen. The latter was found to give on the whole distinctly better results. With it four cases were positive which were negative with the monovalent antigen. In those sera in which both antigens gave positive reactions the hexavalent gave almost without exception the stronger reaction.

In summing up the results of our experience it may be said that the claims of recent investigators on behalf of the test seem to be justified. The test is specific and *a positive reaction with a proper technique indicates the presence of a gonorrhœal lesion*. On the other hand, negative results are not so valuable, as many sera from cases which are undoubtedly gonorrhœal give negative complement fixation tests, as, for example, in acute urethritis, where the reaction is practically always negative.

An analysis of the cases seems to show that the best results are obtained in cases where the lesions occupy sites where there is possibly a lack of free drainage. This is borne out by the high percentage of positive results in arthritis, salpingitis and prostatovesiculitis. These are the very cases in which diagnosis is often extremely difficult and it is just in these cases that the test is of most value in indicating the line of treatment to be followed. As a positive reaction undoubtedly means the presence of an active focus of gonococci, its presence in a clinically cured case of gonorrhœa would necessitate further careful examination of the case.

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INJURIES OF THE FOOT: WITH A NEW METHOD OF REDUCING DISLOCATION OF THE BIG TOE

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WHAT the pneumatic tyre is to the automobile, the foot is to the human body. It has other functions, which aid locomotion and steady the gait, making walking easy and graceful. All the structures of the foot are directly concerned in these functions, and those of the leg and thigh either directly or indirectly. It would take a treatise, and not a short paper, to go into these things minutely.

The chief design of the foot is support of the body weight. This falls upon an arch whose extremities are the os calcis posteriorly and the ball of the great toe anteriorly, chiefly. Closely allied to the supporting function is that of steadying or balancing. When the weight of the body is thrown upon one foot, a steadying action is necessary, and this is provided for by the little toe and its neighbours. These constitute the outer border of a lateral arch, which stands much in the same relation to balancing as the antero-posterior arch does to supporting.

The efficiency of these arches will depend upon the soundness and stability of the structures composing them, and the healthy action of those connected with them. The effect of injury to any of these structures will therefore vary all the way from a slight limp to complete disability. These injuries may be classified under four heads: ignorance, fashion, occupation, and accident. Three of these, ignorance, fashion, and occupation are so closely related that a separate consideration of them in a short paper is unnecessary.

When a man gets out of his bath in the morning, it is instructive to study the shape of the track formed by his wet feet upon the floor. Roughly, it is in the form of an arc made by the heel, the outer edge of the os calcis, the cuboid, the fifth metatarsal and

Read at the annual meeting of the Canadian Medical Association, St. John, N.B., July 7th, 1914.

the prominence under the heads of the other toes. Contrast this with the track of the heeled boot, and you will readily perceive why so many of us are troubled after our day's work with tired aching legs, or in a severe degree with flat crippled feet. The weight of the body falls partly upon the heels which are placed below the posterior end of the os calcis, behind the centre of gravity, as transmitted through the middle line of the malleoli; and also upon the balls of the toes. This tilts the foot into a position of equinus and leaves the anterior end of the os calcis, with its adjoining cuboid, without its natural support. The strain falls upon the ligaments and upon the leg muscles, whose tonus helps to support the arch. The ligaments stretch, the leg muscles tire out and ache, and the arch falls, bringing the scaphoid down to the level of the cuboid or lower, with more or less eversion of the foot.

The lesson from all this is, that if we are to be the victims of ignorance on the part of manufacturers, or of fashion on the part of aping nincompoops, or of occupation on the part of the unknowing, then if we must have heels, let them come well forward, particularly on the outer side, so that our shod tracks shall closely approach those of our bare feet after our bath in the morning.

HALUX VALGUS. The modern shoe is responsible for much more than flat feet. Among these is cramping and deflection of the toes. In this process the big toe, from its prominence, is the greatest sufferer. It is driven outward to rest upon or below its fellows. Nature rebels against the pressure and forms a bursa to protect its more exposed surface. Then this bursa may become infected, and we get a suppurating bunion which may or may not communicate with the joint. In the treatment of these deflections it should never be forgotten that the ball of the great toe is the main anterior supporting pillar of the arch of the foot, and that this pillar of support should be conserved by saving the head of the metatarsal. It may be pared but not excised—pared obliquely inwards, leaving the outer part of the head still covered with cartilage. Many authorities wrongly recommend excision, but Cheyne and Burgard are soundly anatomical in advising against it.

DISLOCATION OF THE GREAT TOE. Did you ever get baffled and exasperated by such a small thing as a dislocated thumb or toe? Last winter a patient came into the hospital whose foot was jammed antero-posteriorly, throwing the big toe upwards and backwards over the head of its metatarsal. I saw the patient next day. The toe was much swollen and the skin abraded, owing

to three separate attempts at reduction under chloroform by three different doctors. I prescribed a lotion of lead and opium. After four days I also tried reduction but failed. In these cases authorities recommend inserting a tenotomy knife near the midline of the toe behind, immediately above the base of the phalanx, and pushing it till it reaches and divides the glenoid fibro-cartilage of the joint. With all due deference to such authorities as Rose and Carliss, in these days of surgical lawlessness, I do not consider this good treatment. Cheyne and Burgard say that it is difficult to carry out the subcutaneous incision effectually, and recommend an open operation on the planter or palmar surface over the head of the metacarpal. This also I consider poor treatment. It is needlessly severe.

A far simpler and easier method dawned upon me when I failed in reducing the dislocation. It is to cut the extensor of the toe, then to hyperflex it, and pull it while in this position. In this manoeuvre the first phalanx acts as a pry with the head of the metacarpal bone as a fulcrum. The pry disengages the heads of the flexor brevis pollicis, the abductor and adductor pollicis, the long flexor tendon, and the capsule. When this is done a slight pull in the hyperflexed position and direction makes the phalanx slip into position over the head of the metacarpal bone, carrying all the displaced structures with it. I took the precaution to place two catgut ligatures about half an inch apart in the extensor tendon before dividing it. These are for the purpose of pulling the divided ends out of their sheaths. Otherwise one will have considerable difficulty in finding them. It is then a simple matter to suture the tendon, especially if cut obliquely or zigzag, and close the flap raised in exposing it. With ordinary antiseptic precautions this operation is as safe as it is simple and, in this case, effective. I imagine it applies to the thumb as well as the big toe.

COMPOUND FRACTURE DISLOCATION OF THE ANKLE JOINT

The old rule used to be, in compound dislocation of the hand temporize; in compound dislocation of the foot amputate. We have got far ahead of that since the use of tincture of iodine as an antiseptic. Limbs which I could not think of saving under the older antiseptics I now confidently try to save under the new. In justification take the following: A stevedore, age fifty-five, falls on the ice. After lying there half an hour he is picked up and brought to the hospital. I saw him soon after. He is filthy all over. On raising his leg the

foot hangs at right angles. When the dirty sock is removed the tibia juts out through a transverse rent in the skin, caused by a fractured malleolus. A thorough washing, a free application of tincture of iodine into every crook and cranny, a re-apposition with sutures in the torn skin, a few strands of silkworm gut as a drain, an outside splint, and healing results by first intention and recovery is uninterrupted.

Another case, over seventy, comes into the hospital with a similar injury. The foot hangs at right angles on raising the leg, the internal malleolus is fractured, the skin over it torn across. But here the astragalus was displaced and connected with the hanging foot. I could not replace it properly, and took it away. I soaked every part with iodine, replaced the foot, and drained with a few strands of horse hair. The skin did not heal by first intention, but gaped, exposing the posterior tibial tendon. A daily application of iodine was made. There was no suppuration. The tendon was removed piecemeal by scissors; healing took place by granulation, and recovery with fairly good ability to walk.

PIN-PRICK OR SCRATCH GANGRENE. By this term I designate the etiology of death *en masse* in patients whose vital forces are equal to nutrition but not to repair. Repair makes a heavier demand upon vital action than nutrition. There are patients with calcareous arteries, and others whose tissues are surcharged with sugar or urea or both, in whom vital action barely maintains nutrition, and to whom the slightest injury, or scratch is a formidable traumatism, causing ulceration and gangrene. In the words of the Good Book, the evil days have come, the keepers of the house tremble, the grasshopper is a burden (a figurative way of shewing that the slightest weight is a load), desire fails, and all the daughters of song are brought low because man goeth to his long home and the mourners go about the streets. Why introduce this here? Simply because you can ease the painful descent and postpone the evil day a little. You can successfully amputate gangrenous toes and save feet and legs by resorting to mild electric stimulation.

Take the following two cases out of several. One with hard arteries, the other with diabetes and Bright's disease. Both had gangrene of the big toe. Neither would listen to amputation of the leg which was recommended. They would "die first." "Can't you amputate the toe?" Very reluctantly I did so, at the metatarsophalangeal joint, explaining that in all probability it would only make matters worse, and hasten gangrene of the foot. All

this time though, I had something up my sleeve. As I told them, the wound broke down, became septic and began to spread. Now for my sleeve. I resorted to electric stimulation; slowly the aspect of things changed, the wounds began to heal. One went home with a slight sinus which closed shortly afterwards. He returned to his office, but subsequently died of his original trouble, diabetes and Bright's disease. There had been no recurrence of ulceration. The other after six years is still living, and looking after his farm in comfort.

You will be interested to know how to apply this electric stimulation. There is no great expense or complexity about it. Simply a copper and a silver disc connected by an insulated copper wire. The copper disc is laid over blotting paper soaked in weak vinegar. This is placed over the skin above the knee where the circulation is good. The silver disc is placed over the spreading sore with some gauze and a bandage over all. If you doubt its value, try it over any indolent ulcer and be convinced.

RESUME. The modern boot is not built on anatomical lines, and causes more pain, trouble, and deformity than most people are aware of. In the operative treatment of halux valgus, functional design is ignored by most authorities. Open section of the extensor hallucis is a simple operation, which permits of hyperflexion and easy reduction of dislocated big toe. The free application of tincture of iodine in compound fracture dislocations at the ankle joint will save many feet, otherwise doomed. The use of mild electric stimulation where vital action is sufficient for nutrition, but not for repair, will render amputation of a gangrenous toe a successful operation.

ERRATUM

UNFORTUNATELY, in the "correction" on page 989 of the November issue of the JOURNAL, the word *Liverpool* appeared instead of *Edinburgh*. Professor Crum Brown held the chair of chemistry at Edinburgh University for many years and it was at Edinburgh that he conducted his experiments on the function of the semi-circular canals.

THE PRENATAL CARE OF OBSTETRIC CASES

BY J. R. TORBERT, M.D.

Boston, Mass.

A CONNEXION of ten years with an institution actively carrying on one branch of medicine has seemed to the writer an excellent opportunity for critical review, to see where we have progressed and in what ways we have added to our ability to take better care of the patients in our charge. Surely in ten years certain definite advances should have been made, and as an actual fact much has been accomplished in obstetrics, the difficulty being to determine what to present to you in the time allotted me to-day. After mature consideration I have decided to bring to your attention what I consider the greatest advance we have made, and as it is fairly comprehensive, to discuss with you in detail the question of the hygiene of pregnancy. This is one of the most important questions in obstetrics, and as the subject is well covered in one department of the hospital, I thought it would be of interest to describe in detail the workings of what we call the Pregnancy Clinic of the Boston Lying-in Hospital. Prior to 1906, we had been open to criticism on the subject of prenatal care of our hospital patients, the subject being passed over as not being important, and the trouble and expense connected with it as being prohibitive. I think both of these statements may be disproved by following the results of the pregnancy clinic since its establishment. The subject of infant mortality and its prevention has loomed up large of late, and among the measures for its prevention those instituted to safeguard the child before and during its entrance into the world are of the greatest import.

The Out-patient Department of the Boston Lying-in Hospital was started in 1881. Beginning in a small way, the clinic has been nursed along until at the present time we are conducting about two thousand confinements in the homes of the poorer classes. These patients are delivered by medical students under competent supervision and the clinic is a part of the obstetrical department of the Harvard Medical School. The indoor service takes care of about

nine hundred cases in addition. In 1891, the care and observation of pregnant women was emphasized by Dr. C. M. Green of the hospital staff in a monograph on the subject, and he deserves great credit for constantly keeping this subject before students, nurses, and medical societies.

In 1901, the Instructive District Nursing Association, working in conjunction with the hospital, began making ante-partum visits on some of the out-patients. This work gradually spread until 1906, when all of the patients were paid at least one visit by a nurse of this association some time between the date of application to the hospital and the confinement. In 1909, the Women's Municipal League began the experiment of intensive prenatal care of the house patients. These patients were visited by the nurse every ten days and not only were questioned as to the proper care of their bodies but were reassured and encouraged as well. This work was so successful and its need so clearly demonstrated that in May, 1911, the Pregnancy Clinic was opened for patients. Owing to lack of space in the hospital proper the clinic was first established in a tenement house opposite, but this year it had outgrown its quarters, and is now in more commodious ones in the hospital buildings. In the plans for our new hospital, now under consideration, this department has received careful consideration.

The present clinic consists of an office, waiting rooms, laboratory, table room, and a room for physical examinations. Patients in the out-patient department come directly to this clinic and remain under the care of this department until they start in labour, unless some serious complication arises which makes hospital treatment desirable. We are constantly urging upon our patients the importance of putting themselves under our care early in their pregnancy, but find it difficult to get hold of them much before the fifth and sixth months. The history of the patient is taken, both social and clinical, careful stress being laid upon the previous obstetrical history. The past medical history is gone into in detail. Here we enquire about previous diseases which may have left an imprint upon the patient's system. Among them are diseases affecting the heart, as rheumatism, tonsillitis, scarlet fever, diphtheria, etc., any diseases of the central nervous system; tuberculosis, pulmonary or bone; renal disease, etc. Attention to this past history will often avert eventual trouble which with early diagnosis and treatment can be properly controlled. Should the patient have passed through one or more confinements she is sent into the room for physical examination. The nurse secures a

specimen of urine on the way to this room. The physician examines the urine and takes the blood pressure. The abdomen is examined, the probable date of confinement estimated, and a complete physical examination made. External pelvimetry is done in all cases. The patient receives minute directions as to the hygiene of pregnancy, and is told to return in four weeks, or sooner if any untoward symptoms arise. She is told that if her symptoms are acute and should she need the attention of a physician, she is always to come to the hospital for treatment at any time of the day or night; or if she is to receive care in her own home, she is given a card which she can send to the hospital, and medical care will be furnished at once. The patient's name is then given the nurse who makes the follow-up visits; the pregnancy clinic nurse follows some of these cases, and this is the ideal arrangement. The nurse being present at the examination by the physician learns what to be on the lookout for in that particular case. When she comes to the patient's house it is not as a stranger but a friend that is welcomed. The influence of a nurse is far spread in a community, and her field for good in this direction indefinite.

Should the patient, however, give a history of previous difficult labour or should she be a primipara, she is referred to the table room where a careful vaginal examination is added to the complete physical examination previously described. Should the pelvis show marked contraction and the patient be at or near term, she is sent to the hospital for consultation with the visiting man on duty at the time. If she shows albumin in the urine or a high blood pressure, if the symptoms are acute, she is sent into the hospital for treatment. If the symptoms are mild, she is told to return to the clinic for examination in three days, five days, or at the end of a week. We find that most patients are constipated and that practically none of them are drinking enough water, and that when the fluid intake is sufficient and the bowels active, the urine becomes normal in the vast majority of cases. When the patient returns for her subsequent visits all the previous data are reviewed by the physicians, all symptoms that have developed since her last visit are recorded. Most of the patients return faithfully and seem to appreciate the services rendered.

Considering the various methods of examination used in the clinic, I wish to lay special emphasis on the abdominal palpation of the patient at or near term. A great amount of valuable information is obtained by this examination, the nearer the onset of labour the greater the value of the examination. Here we are able to determine the lie of the child, estimate the size, determine the existence of

multiple pregnancy, the viability and strength of the infant, and, most important of all, the relation of the presenting part of the fetus to the inlet of the maternal pelvis. After considerable experience in the use of this manœuvre I am convinced of its great importance and its value in the subsequent handling of the case when labour starts. With practice one becomes proficient in its use, and it is remarkable how much one learns from its systematic use. At the Boston Lying-in Hospital we are constantly being forced into doing hopeless operations on cases, sent in from outside, in which, had the practitioner a knowledge of this relation, no such condition would have arisen. Here again enters the question of system in examination and record cards; given a printed record with the headings of the facts to be ascertained, it is surprising how soon one gets to be expert in recognizing normal and abnormal presentations. Too little stress has been laid on this subject of ante-partum examinations both by obstetric teachers and textbooks, and this is only one of many points brought out in the pregnancy clinic.

The results of the clinic are interesting and instructive. Dr. J. L. Huntington of the staff of the pregnancy clinic has worked up this subject and I am indebted to him for permission to use his figures.

Beginning with the first case that made application after the clinic had been running for five months and the present system established, the records of one thousand cases have been carefully reviewed. Of this series, 609 cases were delivered in the patients' own homes by students, externes, and the out-patient staff of the hospital; 230 were delivered inside the hospital by the house staff. the remaining 161 who applied at the pregnancy clinic for treatment may be disposed of as not being pregnant, as having refused examination, as having been discharged to private physicians on request, discharged to other hospitals, delivered by midwives, or eloped. Of the 609 cases delivered in the out-patient department all but 44 were foreign born. One hundred and fifty-seven were pregnant for the first time, 452 had had one or more previous labours. The complications of pregnancy that these patients had, not severe enough in character to make it necessary for the patients to change their original plan of being cared for in their own homes, were as follows: 36 showed albumin in the urine without other signs of toxemia, and without a further diagnosis being made; 9 showed early signs of toxemia as well as albumin in the urine; 11 had moderately contracted pelvis; 5 showed heart lesions; 2 had syphilis; 1 had gonorrheal cystitis; 1 had bronchitis, and 1 threatened miscarriage.

To see the results of the work accomplished in this antepartum work it is necessary to follow these cases through confinement and the puerperium until discharged from the care of the hospital. Of the 609 cases, 545 had normal deliveries. The other results were: 21 low forceps and 18 high forceps operations; 11 breach deliveries and extractions; 6 versions and extractions; 6 twin deliveries; 1 adherent placenta and 1 miscarriage. The average length of time that the mothers were under the care of the department after delivery was 12·17 days. Six hundred mothers were discharged well; 5 were discharged to private physicians during the puerperium at their own request; 1 was sent to the tuberculosis hospital; 2 died, one with pulmonary embolism, the other with adherent placenta and post-partum hæmorrhage. The infants were under the care of the department for an average length of time of 12·19 days; 576 were discharged well; 3 were discharged to the Eye and Ear Infirmary with ophthalmia neonatorum and conjunctivitis; 2 to the Infant Hospital with bronchitis, and they subsequently recovered; 5 to private physicians on request of parents; 1 to the Massachusetts General Hospital with congenita syphilis; and 10 were premature. There were 14 stillbirths, 6 being macerated fetuses and 8 following operative deliveries. This would give a rate per 1,000 births of 22·9 stillbirths, which compares favourably with Boston's rate of 39·8, and the Borough of Manhattan's 48·6. Exclusive of the care of the confinement and of the services of the physician during pregnancy, the total cost of caring for 2,000 cases annually has been \$2,321.55 for the first year and \$2,221.55 for subsequent years. This is an average cost per patient of \$1.16.

We feel that the clinic fills a much needed want in our community and its possibilities are unlimited, of late it is being used with much success for teaching purposes by the Harvard Medical School.

The system of the clinic is very comprehensive and we feel that our physicians and nurses are much better fitted now for doing maternity work. Obstetric teachers strongly urge their students to develop some method of history-taking at the outset of their practice, which will assure their patient the greatest care during the pregnancy, and a study of which subsequently may be of profit to them. Should the physician not take up some methodical system of recording his cases at the outset of his practice, he is not likely to do so later. Of course it is not always pleasant to acknowledge one's errors upon paper, but one can learn as much or more from a subsequent study of such errors as from successes.

Case Reports

TUBERCULOSIS OF THE SPLEEN*

BY J. HALPENNY, M.D.

Winnipeg

MRS. D., age thirty-one, was admitted to the Winnipeg General Hospital, November 11th, 1914; discharged November 26th, referred to me by Dr. Kippen, of Newdale, Manitoba. Has five children, all healthy, no miscarriages; youngest child seven months old. Patient noticed a lump in the abdomen just after last child was born, and thought it was pregnancy commencing again. She never told any-one till three days before she came to the hospital. She was seen at that time by Dr. Kippen. At the time of taking the history she insisted that there were no symptoms except the presence of the tumour. She was in good spirits, looked well, except that she was pale and insisted that she had no pain, nor was there any tenderness on examination. There was a large, well-defined tumour on the left side of the abdomen. This mass at the upper end was hidden under the ribs and the lower end extended almost to Poupart's ligament. The outer border lay well out at the lateral abdominal wall. The inner border ran close to the umbilicus; at its upper end it was rather thick but toward the lower end thinned out considerably. Palpation from behind showed the area between the ribs and the crest of the ileum filled up. The mass was movable. It was firm. Near the umbilicus it was covered only by abdominal wall, as was the case to the left of the stomach. Otherwise it was covered by bowel.

She complained of nothing except the presence of the tumour. The urine analysis was normal. Unfortunately no blood count was taken before operation. In the notes made at this time was the following: "It is not pancreas, not from the gastro-intestinal tract, nor does it seem to be a gas cyst of the omentum. It may

*Since this paper was written Dr. Adami has examined slides and writes as follows: "Even though you have been unable to transmit the disease to guinea-pigs, the picture is such that I must label the condition 'Tuberculosis.' I do not know any other condition that would produce this picture."

be spleen but more likely kidney. We will explore the abdomen first, however."

At operation the incision was made along the right rectus. The tumour was at once seen to be the spleen and resembled, in gross appearance on its surface, an ordinary tubercular kidney. It was not adherent. There were some enlarged glands along the mesentery of the ileum which were not disturbed for fear of endangering the circulation of the bowel. The removal of the mass was very easy. There was considerable bleeding from the abdominal wound, but none from the pedicle. The other abdominal organs were normal as was the peritoneum.

Forty-eight hours after the operation, the temperature reached 101° , the respirations 36 and the pulse 120. After this the convalescence was smooth and the patient left the hospital fifteen days after the operation. Blood counts were taken on the day following the operation and on the third, sixth and ninth days. The first count showed 27,000 white cells; second count red cells 4,120,000; white cells 19,000. Out of 100 white cells counted, 89 were polymorphonuclears, 9 were large mononuclears and 2 were eosinophiles. The hæmoglobin was 80 and the colour index was .97. The third count showed 16,400 white cells with 94 per cent. polymorphonuclears. The last count showed 4,500,000 red cells and 10,400 white cells. The hæmoglobin was 80 and the colour index was .87. The patient had been out of bed about six days before she left the hospital and went directly to her home some two hundred and fifty miles distant.

The pathological report by Dr. Sidney J. S. Pierce was as follows:

Specimen consists of an enlarged spleen. Size $20 \times 33 \times 5$ cm., weight 950 grammes. Over the surface and throughout the pulp are numerous nodules of the size of a hazelnut. These are of soft consistence and red colour. Those on the surface show a greyish centre but there is no caseation.

Microscopic sections of nodules show a somewhat myxomatous structure. In this are numerous tubercles consisting of a small necrotic area surrounded by a zone of epithelioid cells. Giant cells are very numerous.

Diagnosis: Tuberculosis.

Biological examination: Guinea-pig injected intraperitoneally with emulsion of spleen pulp, remained in apparent health and increased in weight. Killed ten weeks later. On autopsy, no sign of disease.

Tuberculosis of the spleen is rare. Franke,¹ in 1906, collected twenty-nine cases; ten were operated on, with seven cures. In 1909 Fischer² collected twelve cases. Possibly these two groups overlap. Bland-Sutton³ reported one in 1913, and Mayo⁴ one in the same year. The writer was unable to find any cases reported in Canadian literature.

Bland-Sutton regards tuberculosis of the spleen as always secondary to a primary focus in some other organ. Mayo says his case was primary. In the case here reported all one can say is that no clinical focus was found elsewhere.

The pathology in these cases is somewhat debated. Wilson,⁵ in his review of the available material at the Mayo clinic, classed one case as tuberculosis until he got what he regarded as negative results by "examination of alcohol-fixed material stained for tubercle bacilli and of three guinea-pigs inoculated with fresh spleen." Giffin⁶ classed one case, evidently operated on early in their series, as tuberculosis. This is no doubt the case referred to by Mayo the same year. Wilson evidently did not have this particular spleen for examination for his summary.

In Wilson's list of Gaucher spleens his second case, A 9315, was at first regarded by him as tuberculosis but on finding no tubercle bacilli, and further having had three negative results on inoculation of guinea-pigs, he later made a diagnosis of the Gaucher spleen. Brill and Mandelbaum⁷ had the opportunity of examining the slides from this case, and they say: "The resemblance to a tuberculous lesion is most striking, even though distinct tubercles are not seen." In a footnote to Brill and Mandelbaum's article the following evidence is given that Wilson's second case was a tuberculous spleen, not one of the Gaucher type: "Since the above was written, with the kind permission of Wilson, the slides of his three cases were submitted to Marchand for an opinion. Marchand writes that Wilson's first case is a typical splenomegaly of the Gaucher type. He agrees that the second case is one of tuberculosis, even though tubercle bacilli could not be demonstrated in the sections or by animal inoculation."

In order to settle as nearly as possible the diagnosis in our case, Dr. Pierce was good enough to submit the specimen and slides to Dr. Gordon Bell of our college. He gave it as his opinion that the case was undoubtedly one of tuberculosis. Dr. Adami, while on a visit to our city, gave the same opinion, adding that he thought it was of the avian variety of tuberculosis. Slides were also sent to Dr. Mandelbaum, who wrote to Dr. Pierce as follows: "There

can be no question but that it is a case of nodular tuberculosis. It is almost an exact counterpart of Wilson's case, which he reported as one of Gaucher's disease, and in which he also failed to find tubercle bacilli. Although the lesion in your case is somewhat more advanced than Wilson's, the resemblance is very striking and the process is identical."

With the evidence here presented it would seem a safe diagnosis when this case is called tuberculosis of the spleen. The patient is now in good health.

In conclusion, I wish to express my great appreciation of Dr. Pierce's usual painstaking care and assistance in clearing up the diagnosis; also to Drs. Bell, Adami and Mandelbaum for examining the specimen and giving their opinions.

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THE general financial situation is being felt severely by the hospitals of Montreal, all of which are dependent in large measure on private contributions. The General, Notre Dame, and Western Hospitals are face to face with a deficit amounting to \$85,000, and are in a more critical position than ever before. The deficit of the Montreal General alone is \$67,013. A delegation of representatives from these institutions recently waited on the Board of Control to request that the deficit be paid by the corporation of Montreal. The matter was promised careful consideration.

Editorial

THE LATE PROFESSOR MINES

MCGILL UNIVERSITY and physiological science have received a rude and painfully sudden shock in the recent death of Professor G. R. Mines. Among the younger generation of physiologists there was none more brilliant, none of greater promise. And now in a moment all that is past. The very suddenness of his death as the result of a risky experimental observation, which in his enthusiasm—and, we must sadly confess, most culpable unwisdom—he was performing upon himself in the solitude of a medical college on a Saturday afternoon, is tragic. Had it come to a man whose life work had been accomplished, or who had been a failure in any one of his relationships towards society the tragedy would have been mitigated. Young, sound in health, buoyant and delighting in his new surroundings, with a personal charm that attracted all towards him, with a record of investigations accomplished such as good men twenty years his senior would be proud to own, and with high hopes for the future, in such an one the tragedy is unrelieved. We can only console ourselves after the manner of those of old, by realizing that he was one whom the gods loved. Certainly few men have evoked a warmer personal liking, not to say affection than came to him at Cambridge, in Toronto, and during his brief weeks in Montreal.

The outstanding details of his life are few. Born at Bath, Somersetshire, in May, 1886, his early education was obtained first at Bath College, and later when his father's position as one of H. M. Inspectors of Schools called him to East Anglia, at the Grammar School, King's Lynn. As a boy he showed an intense passion for music, and at Lynn a well-known amateur offered to direct his musical education, being

convinced that he would attain the very highest rank as a musician. But when the family moved to Hereford, he came under the influence there of Dr. P. M. Chapman, who recognized his remarkable gifts and so stimulated his liking for natural science that he persuaded him to take this for his career, and to this end Mines prepared himself for Cambridge, gained an entrance scholarship at Oliver Cromwell's old college, Sidney Sussex, in 1904, had a brilliant undergraduate course, and in 1909 was elected to a Fellowship of his college, becoming there director of natural science studies. At the same time he was a member of the teaching staff of the physiological department of the University.

Along with James Mackenzie, Chapman, of Hereford, was one of the pioneer physiologist physicians: twenty years ago in his Goulstonian lectures he demonstrated the usefulness of the cardiograph and chronograph in routine practice. And doubtless it was his strong influence that led Mines to physiology, and particularly to cardiac physiology. It is in the development and interpretation of exact methods of record of heart action that Mines made his mark: the investigation of the different curves of the electro-cardiogram, their relationship and significance, the effects of electrolytes and of hydrogen-ion concentration upon the cardiac cycle, and, as intimately associated with the subject, the investigation of the nature of muscular contraction in the light of the newer colloid chemistry. To pursue his studies upon the hearts of lower animals, he spent his vacations at the Marine Zoological Stations at Plymouth, Rostock, and Naples. Quickly seizing upon the value of the cinematograph as a record of animal movements, he made himself a master of its technique and worked at the newly opened Marey Institute at Boulogne. One of his latest papers is illustrated by a succession of cinematograph photos of the contractions of the frog's heart. He had a capacity amounting to genius for devising methods and instruments of exact record. We would recall his novel—and singularly simple—apparatus for employing a pocket watch for a time marker, and his method, published recently,

of employing the dictaphone—the “Chronodictaphone”—to record at the precise moment the necessary notes to be made in the course of a physiological record. In his all too short period as an investigator he had published some forty-five scientific papers.

The last winter was spent by him in Toronto as temporary assistant to Professor Brodie, he being attracted there by the activity of research and admirable equipment of the physiological laboratory. It was at the end of last session that he was appointed to the vacant chair at McGill University, and only this autumn that he took up the work at Montreal.

This is not the place to dwell upon what his loss means to his young widow and her two little children, beyond expressing the deepest sympathy for them left thus bereft of support.

THE WOUNDED

IT is evident from the reports in the English medical weeklies now coming to hand, that the arrangements for treating the sick and wounded have much improved, and are working with a wonderful smoothness and efficiency. Even at the first everything seems to have been done that was humanly possible, and those who criticized had little real knowledge of the magnitude of the difficulties which the medical services had to face. There is now sufficient hospital accommodation for present needs, and the personnel of most of the hospitals exceeds the regulation requirements. A gratifying feature is the number of physicians and surgeons of experience who have volunteered and who, in many instances, are content to occupy subordinate positions. The facilities for transporting the wounded have greatly increased. Instead of a journey of perhaps four days in improvised cars, the transfer from the front to the base is now a matter of hours, and the special ambulance trains are virtually travelling hospitals. Many

of the less severely wounded are taken to England without passing through the base hospitals, being transferred directly from these trains to the hospital ships, which are large transformed liners with practically all the conveniences of a base hospital.

This may partially explain the statement of a correspondent, who writes from a base hospital in France, that "possibly a majority of the wounds are of almost incredible severity." But more surprising than this, and more disquieting, is the nature of the infecting agents. The ordinary pyogenic organisms are conspicuous by their absence, or at least by their unexpected rarity, but their place is taken by the deadlier anaerobes, such as the bacilli of tetanus, malignant oedema, and the aerogenes capsulatus. Moreover there would seem to be at least one anaerobe which is causing gangrene and which is new to experienced bacteriologists. Certainly it is difficult to identify it with known forms. The explanation offered is the intensive cultivation of the soil in France and Belgium; such a soil, everywhere thoroughly manured for centuries past, constitutes a congenial habitat for the anaerobic organisms.

Paradoxical as it may seem, the very prevalence of tetanus has rendered inadvisable the routine prophylactic use of the antitoxin; but only by strict economy can the threatened exhaustion of the available supplies of the serum be postponed. The usual practice is, therefore, not to give it till the first warning symptom, whether doubtful or not, makes its appearance. Some undoubted cases are reported cured by what would be considered small quantities of antitoxin, e.g., two or three doses of 20 cc. in a period of ten days.

The wounds caused by shell fire are often extraordinarily extensive; but many unexpected recoveries are recorded, even when the brain or the abdomen has been shockingly injured. Rifle bullets, which often make small, clean-cut wounds, not rarely cause complete shattering of a bone with wide laceration. This is particularly the case when the firing

is at short range, and it is probably wounds thus received that have given rise to the accusation of using dum-dum bullets. In these modern battles lasting weeks, and often without respite even at night, many of the wounded have lain in the trenches untended for more than a day, sometimes with little or no food or water. It is obvious that their wounds are infected from the start. Hence it is that the surgeons have had to return to early Listerian principles of treatment. Asepsis gives place to a vigorous antiseptis. Strong iodine and hydrogen peroxide are amongst the commonest agents used, especially by the French; iodoform, carbolic and permanganate are also favourite dressings. From wounded soldiers who were taken by the Germans and afterwards recaptured it is learned that in nearly every case they were kindly treated by the enemy. On the other hand some report that they were robbed of the little food they happened to have with them, or that they were stripped of their greatcoats: Happily such instances are rare.

So far there has been very little sickness. In one of the largest of the home hospitals, up to the end of October, only one case of typhoid had been received from the front. The health of our Canadian troops, as of the rest of the vast army under training in England, has been good. On page 1119 will be found interesting letters from two of our colleagues. Apart from a few cases of meningitis, what sickness there is, is of a nature incidental to the life of exposure.

A LETTER FROM THE FRONT

IN a letter to Professor Adami, dated October 29th, a well-known Dublin pathologist gives the following interesting description of his varied activities in France: "I volunteered on the declaration of war and have had a good deal of work to do. At first I was attached to a general hospital as pathologist and physician. We opened eight hundred beds at Havre, and then came the retreat on Paris and we had to evacuate.

We went then to St. Nazaire at the mouth of the Loire, and did not open up, but stood by at putting wounded on to the ships off the trains. This went on for three weeks, and I was in a state of extreme depression as I thought I would never get up near the front. At last I was sent up and told to equip myself as a mobile laboratory, which I did in Paris, and went up to Braisne near the Aisne, where I was to start at the early diagnosis of enteric and, if possible, the anaerobe which was causing so much gangrene. The latter was an almost impossible task, but I got a lot of positive blood cultures and, more important still, I was able to exclude a very large number of doubtful cases. I got malignant œdema in the heart's blood of one man but had not any way of properly verifying it. We then moved to the new front where we are now—I may not name places, but you probably know quite well—and there we were greeted with the news that there would probably be two thousand wounded the night we arrived. I was asked to run a hospital, and myself and another man took a school and started in. In our first four days we put through seven hundred and twenty cases, of which about three hundred and twenty-five were lying down cases. On one day we had seven compound femurs and quite double that number of tibias. The reason of this was that they were attacking instead of being in the trenches and so they got far worse injuries. There is less gangrene and less tetanus in this country than on the Aisne, where tetanus is notorious in civil practice. We give serum to almost all the shell cases and chance the bullet wounds. There has been a lot of tetanus. In three weeks, at one general hospital, after the Marne and the first fortnight of the Aisne, when stores and equipment were hard to get, they had 65 per cent. of their deaths from tetanus. I don't think there is much true dysentery yet, a few cases of diarrhœa but not the real organism (whichever that may be).

“We hear all sorts of tales about the Germans but there is no doubt that the white flag dodge is continually being used.

Also they come along singing the *Marseillaise*, which is misleading. Our men got them at it the other night, having been caught out about a week before, and wiped out the lot. We got shelled in Braisne and I can't say I like it. One shell frightened me badly; I heard him coming up the street and apparently slowing down. I was sure it was a half volley. It pitched about forty yards away and knocked a hole in the church. I expect you have had enough, but I thought you might like to hear something not in the papers. Excuse the paper; it is one of the exercise books of the school children."

MEDICAL ASSISTANCE IN OUTLYING DISTRICTS

THE provision of medical assistance in outlying districts in the western provinces of Canada is by no means an easy matter. The difficulties encountered include the great distances to be traversed, frequently in the most inclement weather, the inability of those requiring medical aid to pay an adequate sum for such assistance, and the scarcity of practitioners willing or in a position to enter upon a life of hardship and meagre remuneration. An almost parallel case is found in the Australian bush and it is of interest to know what is being done there. In the issue of October 17th of the *Medical Journal of Australia* an account is given of the manner in which it is proposed to meet the needs of the bush districts in New South Wales. It is the intention of the Minister of Public Health to place well-trained nurses in districts which are out of reach of a medical practitioner and too sparsely populated to make it possible for a medical man to practise there. In some districts the local community will defray the necessary expenses, or part of the expense, and it is estimated that a permanent subsidy of about \$400 a year for each district will meet the needs of the situation. Provision of course must be made for cases of childbirth and the nurse appointed should be a well-trained and thoroughly efficient midwife. The difficulty of obtaining a sufficient number of such nurses is

apparent at once and danger will arise if partially trained women are employed. It is intended that medical practitioners shall pay periodic visits to these districts and shall be prepared to go there on emergency calls. If necessary the government will pay a special fee for an urgent call, but the urgency is to be determined by the nurse and not by the patient. A practitioner will be established in places with a population of one thousand and over and an income of \$3,000 will be guaranteed, partly by the government and partly by the local residents. The doctor undertakes to attend everyone in the township and those able to do so will be expected to pay an adequate fee for his services; the local guarantors will see that he is paid the fees charged and at the end of the year, and should the amount received by the doctor be less than the amount guaranteed by the local committee, the deficit will be paid. For instance, should the local residents guarantee an income of \$1,500, the additional sum of \$1,500 to make up the stipulated income of \$3,000 will be paid by the government. Should the income received by the doctor exceed the amount guaranteed locally, however, the government grant would be reduced in proportion. In certain areas, of course, special arrangements will have to be made but the proposed arrangements have much to commend them and are worthy of the consideration of those responsible for the welfare of Canadians living in the far-away districts of the West.

IMPORTANT contributions have been made of late years to the theory and practice of surgical anæsthesia but the complete scientific development of this branch of medicine has been somewhat hampered by the want of a suitable journalistic medium. This condition is now to be remedied for, commencing with the present month's issue, a supplement to the *American Journal of Surgery* will be published under the able editorship of Dr. F. Hoeffler McMechan, of Cincinnati, one of the founders of the American Association

of Anæsthetists. The supplement has been adopted by the latter society and by the Scottish Society of Anæsthetists as their official organ; it will be a complete journal within a journal, containing editorials, contributed articles and communications, abstracts, transactions of societies, and book reviews.

THE Wisconsin Marriage Law, which provides for a medical examination of "all male persons making application for license to marry," has been in force since the beginning of the year. The weight of opinion seems to be that it was a premature and ill-digested piece of social legislation. It was also attacked as unconstitutional, and the court of first trial upheld the attack. The weekly report of the United States Public Health Service, Vol. 29, No. 37, publishes the opinion of the chief justice of the Wisconsin supreme court upholding the so-called "eugenic marriage law," and also the dissenting opinion of two of the members of the court. "The case really turned on whether or not the language of the law required the application of the Wassermann test. . . . The majority of the court held that the legislature did not intend to require the Wassermann test." The statute as thus interpreted would appear to be about as useless as its opponents have always declared it to be. *Leges sine moribus vanæ*. And yet, in spite of the probable failure of the legislative experiment, its educational value, in view of the universal interest it has aroused, must be considerable.

POISONING by wood alcohol continues to claim its victims and the inadequacy of the legal provisions in the United States in this matter is much to be deplored. The recent tragedy in Vermont in which fourteen persons were killed and a number of others blinded by drinking whiskey adulterated with wood alcohol, coupled with the occurrence in New York when three persons succumbed and others became blind after drinking

anisettes consisting largely of wood alcohol, serves to increase the importance of this question. The blame would appear to attach to the producers of wood alcohol who put it on the market in a form closely resembling grain alcohol, or Cologne spirits, and under the name of colonial spirits. To make the deception more complete, the latter is frequently abbreviated to col. spirits and sold instead of the non-poisonous Cologne spirits. An effort was made during the last session of the New York State Legislature by the Committee for the Prevention of Blindness to have a Bill passed to prevent such poisoning, and the danger of confusing Cologne and colonial spirits was emphasized by the president of the State Pharmaceutical Association. Unfortunately the Bill was defeated. In the city of New York the department of health now requires all forms of wood alcohol to be labelled "wood naphtha" and to bear a poison label, but even in New York nothing has been done to prevent poisoning by the inhalation of wood alcohol fumes in the industries.

THE Cochrane Hospital Board has now about \$10,000 in hand and it is the intention that the construction of a hospital shall be commenced next spring. The board has received most of the equipment required for a twenty roomed hospital from the Northern Ontario Relief Committee. It will be remembered that after the fire of 1911, a sum of money was subscribed for the relief of those in straightened circumstances as a result of the fire in the Porcupine district. Part of this money—\$20,000 approximately—remained in the hands of the Northern Ontario Relief Committee and, in 1912, a request was made by the people of Cochrane that this sum be expended on the erection of a hospital at Cochrane. This the Relief Committee was prepared to do on condition that about \$4,000 of the amount was distributed among the Porcupine hospitals. The latter, however, objected and the matter was taken to law, with the result that the money was divided equally between Porcupine and Cochrane.

Book Reviews

SEROLOGY OF NERVOUS AND MENTAL DISEASES. By D. M. KAPLAN, M.D., director of clinical and research laboratories of the Neurological Institute, New York City. Octavo of 346 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3.50 net.

Dr. Kaplan appears in this book to have said the last word which can be said at the moment upon the use of sera in nervous and mental diseases. This word is of great authority as it utters the voice of the Neurological Institute of New York. Also this is the first occasion, so far as we are aware, on which the scattered literature on the subject has been brought together in a well ordered form. The writer will undoubtedly meet with the approval of physicians, particularly neurologists and psychiatrists, in supplying them with a volume to satisfy their questionings. The historical element in the book is strong, and there is an adequate record of human thought and human achievement in this division of medical practice. Part I is devoted to technology. Part II deals with the serology of nervous and mental diseases of nonsyphilitic etiology; and Part III deals with the serology of those affections which are due to the specific organism of syphilis. The last section is an extraordinary complete discussion of the therapeutic use of salvarsan. The bibliography occupies seventy pages and includes everything of importance which has ever been written upon the subject. It is a most workmanlike book, and the profession is under a heavy obligation to Dr. Kaplan for this arduous labour which he has carried to so successful a conclusion.

DISEASES OF THE RECTUM AND ANUS. A PRACTICAL HANDBOOK. By P. Lockhart-Mummery, F.R.C.S. London: Baillière, Tindall and Cox, 1914.

This book has a special claim to recognition. The material on which it is based has been drawn from St. Mark's Hospital, where the practice is confined to diseases of the bowel. In the course of a year seven thousand five hundred cases are treated, and six hundred and fifty are admitted to the wards. The author

is senior surgeon, and he has utilized the material as well as that arising in his private practice to the fullest extent. The book is quite new. It does not, of course, attempt to include all recently recorded work upon the subject, or even to summarize it. It sets forth, rather, those operations and methods of treatment which have been found in experience of the most value; and it does so in clear terms so that they can be apprehended by any student or practitioner.

A MANUAL OF PRACTICAL HYGIENE. By CHARLES HARRINGTON, M.D., late Professor of Hygiene in the Medical School of Harvard University. Fifth edition, revised and enlarged by MARK W. RICHARDSON, M.D., Secretary to the State Board of Health of Massachusetts. Octavo, 933 pages, with 125 engravings and 24 plates in colours and monochrome. Cloth, \$5.00, net. Lea & Febiger, publishers, Philadelphia and New York, 1914.

The revision of this, the fifth edition of Harrington's "Practical Hygiene," has been undertaken by the Secretary to the State Board of Health of Massachusetts in collaboration with the Chief Chemist, the Chief Engineer, the Assistant to the Secretary, the Chief Analyst of Foods and Drugs, and the former Secretary for the Massachusetts State Board of Education. It will readily be understood that when so many trained collaborators set their hands to such a task that the work would be well done, especially when they had to deal with so valuable a ground-work. Hygiene has become a new subject within the past ten years, and its range has become so enormous that it requires a varied talent for its elucidation. This book is the work of expert hands and contains the best that has been done, and thought, upon the subject. It covers the whole range of industrial life, and is really a treatise upon modern civilization. To Military Hygiene and correlated subjects, a large section is devoted, and the finest details of the soldier's life are investigated. It is worthy of remark that the personnel of the German Medical Service is about double in number that of the English army. The book is not for the profession alone. It should be read and kept for constant reference by all others who are interested in the maintenance of the public health. It is a splendid achievement of American science.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A TREATISE ON DISEASES OF THE NOSE, THROAT, AND EAR. By WILLIAM LINCOLN BALLENDER, M.D. Price, \$5.50 net. Philadelphia and New York: Lea & Febiger, 1914.

THE INFANT: NUTRITION AND MANAGEMENT. By ERIC PRITCHARD, M.A., M.D., M.R.C.P. Price 3s 6d. London: Edward Arnold, 1914.

MENTALLY DEFECTIVE CHILDREN. By ALFRED BINET and TH. SIMON, M.D. Authorized translation by W. B. DRUMMOND, M.B., C.M., F.R.C.P., with appendix containing the Binet-Simon tests of intelligence by MARGARET DRUMMOND and an introduction by PROFESSOR A. DARROCH. Price 2s 6d. London: Edward Arnold, 1914.

PHYSIOLOGICAL PRINCIPLES IN TREATMENT. By W. LANGDON BROWN, M.A., M.D., F.R.C.P. Third edition. Toronto: The Macmillan Company of Canada, Limited.

NERVOUS AND MENTAL DISEASES. By JOSEPH DARVIN NAGEL, M.D. New (92nd) edition, revised and enlarged with fifty engravings and a coloured plate. Price \$1.00 net. (The Medical Epitome Series). Philadelphia and New York: Lea & Febiger, 1914.

PRACTICAL THERAPEUTICS. With especial reference to the application of remedial measures to disease and their employment upon a rational basis. By HOBART AMORY HARE, M.D., B.Sc. New (15th) edition, thoroughly revised and rewritten. Octavo with 144 engravings and 7 plates. Price, \$4.00 net. Philadelphia and New York: Lea & Febiger, 1914.

- AN EPITOME OF PEDIATRICS. By HENRY ENOS TULEY, A.B., M.D.
New (2nd) edition, revised and enlarged. Price \$1.00
net. (Lea's Series of Medical Epitomes.) Philadelphia
and New York: Lea & Febiger, 1914.
- A TEXT-BOOK OF THE DISEASES OF THE NOSE AND THROAT. By
JONATHAN WRIGHT, M.D., and HARMON SMITH, M.D.
Octavo with 313 engravings and 14 plates. Price \$5.00
net. Philadelphia and New York: Lea & Febiger, 1914.
- THE BALNEO-GYMNASTIC TREATMENT OF CHRONIC DISEASES OF
THE HEART. By PROFESSOR T. SCHOTT, M.D., with fore-
word by JAMES M. ANDERS, M.D., LL.D. Illustrated.
Price \$2.50 net. Philadelphia: P. Blakiston's Son &
Company, 1914.
- A MANUAL OF NORMAL HISTOLOGY AND ORGANOGRAPHY. By
CHARLES HILL, Ph.D., M.D. Third edition, thoroughly
revised; illustrated. Price \$2.25 net. Philadelphia and
London: W. B. Saunders Company, 1914. Canadian
Agents: The J. F. Hartz Company, Limited, Toronto.
- MANUAL OF OBSTETRICS. By EDWARD P. DAVIS, A.M., M.D.
Illustrated. Price \$2.25 net. Philadelphia and London:
W. B. Saunders Company, 1914. Canadian Agents: The
J. F. Hartz Company, Limited, Toronto.
- PRACTICAL BANDAGING, INCLUDING ADHESIVE AND PLASTER-OF-
PARIS DRESSINGS. By E. L. ELIASON, A.B., M.D. Illus-
trated. Philadelphia and London: The J. B. Lippincott
Company, 1914. Montreal: Charles Roberts.
- REPORT FROM THE PATHOLOGICAL DEPARTMENT AND THE DEPART-
MENT OF CLINICAL PSYCHIATRY, CENTRAL INDIANA HOS-
PITAL FOR INSANE, Volume 5, 1911-1912 and 1912-1913.
- THE CATECHISM SERIES. PART 1, BOTANY; PART 2, MEDICINE.
Second edition, revised and enlarged. Price 1s each.
Edinburgh: E. & S. Livingstone, 1914.

Men and Books

BY SIR WILLIAM OSLER, BART., M.D., F.R.S.

XXVI. NATHAN SMITH. Readers of my occasional essays will recall how frequently I have referred to Dr. Nathan Smith as one of the pioneers of clinical medicine in the United States. Many years ago his *Practical Essay on Typhous Fever*, New York, 1824, fell into my hands, and I have always praised it as a model of accurate clinical description. He recognized that the autumnal fever of the United States was "a disease *sui generis* arising from a specific cause, and that cause contagion." At Baltimore I was not a little interested to find that the leading practitioner of the city and one of the trustees of the Johns Hopkins Hospital was Dr. Alan Smith, a grandson of Nathan Smith. To him and to his family I was indebted for many acts of great kindness. One evening at his house Mrs. Smith brought out a box of family documents, which I saw at once had a unique value. They told the story of Nathan Smith and his association with the profession in New England, and particularly with the founding of the medical schools of Dartmouth, Yale, Burlington and Bowdoin. I forget whether it was then or later that I urged Mrs. Smith to put this material together and tell the story of one of the great names in the history of the profession in the United States. This she has now done in a charming volume issued from the Yale Press,* with an introduction by Professor Welch. I saw enough of the correspondence to appreciate how valuable the records were for the history of medicine for the period between 1780 and 1830. It is a splendid story, well told in the best possible way, largely in first-hand letters. As Dr. Welch remarks, we have here presented a splendid picture of Nathan Smith's life, "of his struggles and trials, of his indomitable courage and resourcefulness, of his marvelous capacity for work, of his professional and educational ideals and activities, and of his triumphs. We catch intimate glimpses of the active-minded lad upon the frontier, of the student at home and abroad getting, in spite of great difficulties, a good medical training, of the lover

* *The Life and Letters of Nathan Smith*, by Emily A. Smith, New Haven, 1914.

'transported with joy and expectation,' of the devoted husband and father, solicitous for the education of his sons, of the busy physician and surgeon, 'bandied about from one part of the country to the other,' treating fevers, couching for cataract, cutting for stone, excising tumours, and embarrassed most of the time, as is the way of doctors, from failure or inability to collect his fees, small as they were, of the founder of medical schools and the professor, filling and filling well all the chairs in the medical curriculum,—from all accounts a really great teacher, and withal deserving President Woolsey's characterization of him as 'the most delightful, unselfish and kind-hearted man I ever knew, and we children all loved him.'"

I remember how strongly I was impressed by the letters between Nathan Smith and George Cheyne Shattuck, of Boston, the father, grandfather, and great-grandfather of the Shattucks who have helped to make the profession of Boston famous during the nineteenth century. Smith's letters show the energy and perseverance with which he set about the establishment of the Dartmouth Medical School. He taught anatomy, surgery, chemistry, and the theory and practise of medicine. Mr. Abraham Flexner in his report on American medical education speaks of him in relation to Dartmouth as a man who "was its entire faculty, and a very complete faculty at that." The classes increased with rapidity, so that in 1809 there were one hundred students. One of the chief struggles was to get material for dissection, as in those days "the cutting up of dead bodies was a grievous offence to the public." One of Dr. Smith's chemistry lectures brought out the following unique prayer from President Wheelock, who came to college chapel direct from chemical class-room:

"Oh, Lord! we thank Thee for the Oxygen gas; we thank Thee for the Hydrogen gas; and for all the gases. We thank Thee for the Cerebrum; we thank Thee for the Cerebellum, and for the Medulla Oblongata."

It is nice to know that Nathan Smith's name has been honoured at Dartmouth in connexion with the splendid new laboratory for chemistry and pathology.

Largely owing to Smith's untiring energy and ability as a practitioner and teacher, the reputation of the Dartmouth school increased with great rapidity, and it is not surprising that in 1813 he was called upon by Yale College to help in the establishment of a medical school at New Haven. Opening with thirty students the school grew rapidly under his fostering care. It is interesting to

note that in connexion with it he early planned a botanical garden. It was not until 1817 that he severed his connexion finally with Dartmouth, and moved to New Haven. In 1821 he helped to found the Maine Medical College at Bowdoin, and lectured there for ten weeks in each year on anatomy, surgery and medicine, from 1821 to 1823. It was at this period that he did one of the notable operations in surgery, not knowing that it had been done before by McDowell—the successful removal of an ovarian cyst. In 1820, he helped his son, Nathan R., to organize the medical school at Burlington, Vermont. Nor did his energy in establishing schools end here, for his services were enlisted in the founding of the Jefferson Medical College, Philadelphia, in which his son, Nathan R., and Dr. George McClellan took a leading part. Early in 1829 he had a stroke, which fortunately carried him off without a long illness.

Nathan Smith was of the very best type of New England physician, of untiring energy, strong mental and moral qualities, and characterized above all by good plain common sense. His name deserves to be held in reverence, and I am sure this story of his life, so well told by the widow of his grandson, will be warmly appreciated by the profession.

THE following is a list of candidates who have passed the final examination of the College of Physicians and Surgeons of Ontario: Vernon H. Craig, Kingston; John Albert Dobbie, Kingston; Franklin Mortimer Durr, Uxbridge; William Gordon Hamilton, Elgin; Samuel Ross Delap Hewitt, Toronto; Richard Earl Hopkins, Toronto; John Nelson Humphrey, Tara; Edmund Percy Lewis, Toronto; Reginald Allen Matthews, Toronto; William Verne McIntosh, Windsor; Alex. McLeod, Bayfield; Ernest Alexander McQuade, Toronto; Frank Harten Pratten, Toronto; George Alonzo Simmons, Simmons, Que.; Harold Chester Sutton, Cooksville; William John Taugher, Prescott; Harold Murchison Tovell, East Toronto; Edmund Coulter Syer, Pontypool; William Virgil Watson, Toronto; Charles Frederic Williams, Cardinal; Robert Roy Wilson, Toronto; Clarence Francis Wright, London.

Res Judicatæ

HEALTH, INSURANCE AND THE MEDICAL PROFESSION

TO obtain the services of the medical profession for the benefit of the sick of the poorer classes has been the object of many a philanthropic movement. The free clinic and the endowed hospital, both expressions of philanthropy, are made possible by securing the free services of medical men. The fraternal organizations as we know them are an indication on the part of the masses that they would prefer to pay their own way if such were possible. In Great Britain the matter has been deemed sufficiently important for a government to make it the subject matter of legislation. All we require in Canada or the United States is the right type of politician and it will be made the subject matter of legislation on this side of the Atlantic.

The free clinic and all similar institutions are made possible by exploiting the medical profession either in the name of charity or religion. In Great Britain, Mr. Lloyd George, in introducing the National Insurance Act, practically stated that the medical profession should not be so exploited and then went ahead and exploited it in the name of politics.

The medical profession has made great progress in all the sciences pertaining to the healing art, but the business side of the practice of medicine has remained unchanged for generations. A fair percentage of patients pay us a full fee, a few pay us a partial fee, and more than a few pay us nothing at all. It is estimated that 33 per cent. of the urban population of Great Britain was affected by the National Insurance Act. I notice that the percentage of population of any fair-sized city on this continent which seeks its medical attention through the free clinic, the free hospital wards, the fraternal society, the contract physician, or the general practitioners' charity list, is placed by many men as fairly high; some say as high as 50 per cent. Scarcely ever do I find it placed as low as 25 per cent. It seems reasonable, therefore, to conclude that if legislation similar to the National Insurance Act of Great Britain were copied in either Canada or the United States, as large

a portion of the population would be affected. In other words, the profession is receiving nothing for 33 per cent. of its work, for work that is worth more to the public than it ever has been before, at a time when the average medical income is on the decrease and the cost of living on the increase. We are living in an age when the "gold standard" determines one's station in society. Mr. Aloes from Pill Castle, who has made a fortune out of his knowledge of human nature and drives a limousine, is much more likely to be chosen for a senator than Dr. Stork who scarcely makes a living out of his knowledge of medicine and drives a Ford roadster. The day is past when the doctor is respected because of his profession alone, and most of us are guilty of valuing our practices by our cash receipts for the year. Therefore to be consistent we should welcome a method of converting this loss to a gain.

It is obvious that there is something missing in our present day civilization and that society will not be satisfied until the services of the medical profession are at the disposal of rich and poor alike. The National Insurance Act of Great Britain was designed to fit in between the medical profession and the public, but is a good example of how any problem will be solved by commencing at the wrong end.

Can we as a profession do any thing to prevent the copying of such an act in this country? If we can there is no time like the present. A National Medical Service has been suggested by some as the best solution. I can only see two objections to this myself; first, so many things now under government control are not managed with a degree of fairness that would tempt us to place our professional destinies in the hands of politicians, and secondly, the change from our present status is too great. Reforms come slowly, and to be at all permanent must be introduced step by step.

We are living in a commercial age and, I believe, the solution to this problem will be arrived at by studying commercial methods. The business way of insuring one's loss of property through fire is through fire insurance, and the business way of insuring one's loss through sickness is by health insurance. By analyzing insurance methods we can arrive at a solution that will be satisfactory to both public and profession. By accepting the good points of present insurance methods and supplying what is lacking to make it acceptable to the medical profession, we can arrive at a scheme that would guarantee the insured public medical, surgical, and hospital attendance, and guarantee the medical profession their fees. Any scheme of insurance which will include the

following four points should be acceptable to both public and profession:

1. The services of the whole of the medical profession should be at the disposal of the whole public.
2. No one should be made the object of charity.
3. The average medical income should be increased.
4. The basis of reckoning from which the actuary obtains his rate of insurance to the public should be the medical schedule of fees.

This should sufficiently protect the medical practitioner and should be sufficient guarantee to the public. Any insurance scheme which has for its object the securing of medical attention for the masses depends for its successful working on the judgement of medical men, and therefore should remain under medical control. If the scheme depends on our judgement for its successful working, we should be rewarded.

This is perhaps the largest problem that the younger generation of medical men will have to solve in their day and generation. It is worth every man's while studying. As I am not through studying it myself, I would be glad if those interested in the subject would communicate with me. And I shall try to make their questions and objections the subject of a second paper at some future date.

Edmonton.

A. R. MUNROE

LAST month the Quebec Municipal Board of Hygiene and Statistics commenced the publication of a sanitary bulletin. The bulletin, which will be issued monthly, will contain information concerning public health, the prevention of disease, and recent discoveries in matters pertaining to hygiene and health. Important articles will appear both in English and French, others being in either one language according to the source of the information.

Obituary

DR. F. L. DE VERTEUIL, R.N.R., of Vancouver, lost his life on the *Good Hope*, which was lost on Sunday, November 1st, in the naval action off the coast of Chile. Dr. de Verteuil was the son of Dr. J. de Verteuil, surgeon major in the British army. He was born in Trinidad in 1879 and received his medical education at Edinburgh and Paris. Dr. de Verteuil was particularly interested in the study of radium therapy and had written several important papers on the subject. He had been in practice in Vancouver for two years and a half. A few months ago he went to the West Indies in order to study the curative effects of radium in leprosy; while there he was ordered to join the *Good Hope* in the capacity of surgeon. Dr. de Verteuil leaves a widow and two children.

DR. JAMES GRAEME ROBERTSON died at the Winnipeg General Hospital on November 3rd. Dr. Robertson, who was in the twenty-ninth year of his age, was born in Brussels, Ontario. Seven years ago he went to Winnipeg and soon afterwards entered the Manitoba Medical College from which he graduated in 1911.

DR. MACKLIN, of Bresler, Saskatchewan, died early in October. About twenty-five years ago Dr. Macklin was well-known throughout the West as physician in connexion with construction of the Canadian Pacific Railway.

DR. H. M. SHEPHARD, of Ingersoll, Ontario, died October 20th. Dr. Ingersoll, who was twenty-seven years of age, had been in practice at Ingersoll since April.

DR. R. J. LOCKHARD, of Hespeler, Ontario, died in British Columbia, where he went some years ago to try to regain health.

DR. BRADFORD PATTERSON, of Barrie, Ontario, died November 6th, in the ninety-fifth year of his age. Dr. Patterson had practised in Markham, Collingwood, and Newmarket. He was one of the oldest freemasons in Canada. During the American Civil War he served as surgeon in the Northern army.

DR. HENRY REID McCULLOUGH, of Harrison, Ontario, died October 21st. Dr. McCullough was born on August 14th, 1863: he was the son of the late Dr. Robert McCullough, of Georgetown. After graduating from Trinity Medical College, Toronto, Dr. McCullough went to London and Edinburgh and in 1883 took up practice at Harriston. He leaves a widow and four daughters.

DR. JAMES LESLIE, of Hamilton, Ontario, died October 18th. Dr. Leslie was born in New Pitsligo, Aberdeenshire, Scotland, on September 23rd, 1832. He was educated in Aberdeen and graduated in medicine from the university there. Later he obtained the degree of L.R.C.S. from the University of Edinburgh. Dr. Leslie spent some time as surgeon on vessels in the Arctic regions, subsequently going into practice at New Deer, Aberdeenshire. In 1872 he came to Canada and commenced to practise in Hamilton where he spent the last thirty years of his life. Dr. Leslie was much esteemed and as a surgeon was held in high repute. His son, Dr. Norman V. Leslie, is now with the Canadian Expeditionary Force in England.

DR. E. CAMERON died at Elyria, Ohio, October 8th. Dr. Cameron was born at Albany, Prince Edward Island, and was in the sixty-eighth year of his age. After graduating from Bowdoin College, Dr. Cameron practised for some years on Grand Manan Island, New Brunswick. In 1894 he went into business at Lorain, Ohio, and two years ago was appointed coroner of Lorain county.

News

MANITOBA

It is probable that application will be made to the provincial government in order that more complete regulations may be made concerning the control of tuberculosis in the city of Winnipeg. The King Edward Hospital contains accommodation for seventy-two patients but this is not sufficient for Winnipeg alone and provision must be made for the outside municipalities. Under the present conditions the city has no right to collect fees from such

municipalities for outside patients who are treated in the hospital, nor does the hospital receive any government grant.

A FIRE occurred at the Elgin Street Convalescent Home in the early morning of October 20th. The patients, sixteen in number, were able to escape but the building was badly damaged.

ONTARIO

AFTER a careful investigation of prevailing conditions it has been decided that the slaughter houses of the province shall be brought under the direct regulation and inspection of the provincial board of health. In future the plans and specifications for buildings intended to be used as slaughter houses must be approved by the provincial board. Proper drains, lighting and ventilation will be required and employers will be held responsible for the cleanliness of their employees. No workman affected with a communicable disease may be employed in any department in which meat is handled or dressed. The sale of meat unfit for food is to be made an indictable offence.

DR. S. L. McLAY, of Woodstock, has joined the Royal Army Medical Corps. Dr. McLay went to England some weeks ago to take a hospital course there.

MR. JAMES MANUEL has been elected president of the board of directors of the Ottawa Protestant General Hospital in succession to Lieutenant-colonel J. W. Woods.

TYPHOID fever is reported to be prevalent in Hamilton and Sudbury. In the former place the infection is thought to be due to the milk supply. There are also a good many cases of diphtheria and chicken-pox in Hamilton, and of diphtheria in Berlin.

AN epidemic of measles of a malignant form is reported from certain municipalities near Stratford. A number of deaths have occurred.

A MEETING of the Lambton County Medical Society was held in the officers' quarters of the Watford Armory, October 14th. An excellent paper was given by Dr. W. J. Stevenson, of London, Ontario.

DR. T. A. MALLOCH, of Hamilton, has left for service at the front.

THE Toronto Children's Hospital has been enlarged by the addition of a new wing which gives accommodation for fifty-two more patients and which will be used for detention purposes. An out-patient's department, a power plant and laundry and a new pasteurizing building and plant have also been added. During the last hospital year 31,970 patients were treated in the various departments of the hospital.

QUEBEC

AN outbreak of typhoid fever is reported from Aylmer. Early in November it was stated that more than one hundred cases had occurred. The town of Aylmer is situated on the banks of the Ottawa river, from which its water supply is obtained and the infection is thought to be due to contamination of the water.

DR. JAMES MCGREGOR has been appointed surgeon with the European contingent on the American Ambulance staff. Dr. McGregor practised in Megantic for some time and recently has been connected with the Presbyterian Hospital at New York.

DR. JAMES C. LEE, of Quebec, who recently was appointed house surgeon of the Montreal General Hospital, has joined the Royal Army Medical Corps in England.

DR. C. J. EDGAR, of North Hatley, has been appointed surgeon in the military hospital at Netley.

THE formal opening of the new St. Justine Hospital for Children, Montreal, took place on Sunday, November 8th. The new hospital contains one hundred and eighty beds.

ALBERTA

AN epidemic of typhoid fever is reported from Coal City, a coal camp three miles from Taber, near Lethbridge. Over twenty cases have occurred and one death has been reported.

DR. C. S. MAHOOD, medical health officer of Calgary, has been elected a Fellow of the Royal Institute of Public Health, London.

SASKATCHEWAN

DR. ANDREW CROLL, of Saskatoon, has been elected a Fellow of the American College of Surgeons.

MEDICAL COLLEGES

Alberta University.

THE autumn examinations for licence to practise in the province of Alberta were held at the University of Alberta, commencing on September 15th. The following is the list of successful candidates: W. W. Cross, C. T. Galbraith, F. R. Gray, T. W. Moore, H. C. Swartzlander, J. Thomson, J. H. E. Hastings. The following have been granted supplementals: W. E. Fraser, in anatomy and physiology; E. A. Ferguson, in anatomy and physiology; D. R. Wark, in pathology and medicine; S. Astrof, in pathology and surgery.

ON SALISBURY PLAIN

THE following are extracts of letters received recently from officers of the Canadian Army Medical Corps.

"No. 1 General Hospital, Salisbury Plain, November 1st, 1914. We are all under canvas on this vast plain, and about three miles from a couple of small villages. The hospitals and field ambulances are all together on a hill, with tent doors facing the north east. . . . It looks to me that No. 1 will stay here for some time. I have forty or fifty cases with five assistants, all very competent men. The experience is useful in learning the routine of a military hospital.

"We have had several cases of epidemic meningitis. I am trying to get serum, which I believe was ordered but left in Quebec. Most of the cases are muscular rheumatism, influenza and bronchitis. . . .

"General Alderson has made a very good impression and has impressed upon the commissioned officers that discipline is essential before the troops can be sent to the front. We hear that Kitchener and the Staff in France have no doubt about the issue of the war. The men sent to the front are being well trained, and as you can read in the scanty reports are much more than holding their own. . . .

"We are well fed by Harrods at 1/- daily, the government paying 5/6. If we are extravagant on 3d. cigars, we can manage to spend about 4/- daily. To get anywhere, however, is costly. We are badly in need of a motor but hope to have one shortly."

"No. 1 General Hospital, Salisbury Plains, November 5th, 1914. As you see we are still in England, on the most wonderful training ground I ever saw. Miles upon miles of what looks exactly like prairie land, long deep undulating ground, with innumerable shallow little valleys, looking like nothing so much as a deep rolling ground-swell on the Atlantic, the celebrated downs of Wiltshire, noted for its sheep. Here, at intervals of three or four miles, the Canadian Contingent is quartered, foot, horse, and artillery. Dr. MacLaren, of St. John, N.B., is in charge of No. 1 General; and Cameron and Finley in charge of surgery and medicine; Forbes, orthopedist; Johnson, of Vancouver, assistant surgeon; Ellis, formerly of the Rockefeller Institute, biologist and pathologist; Lomer, of Ottawa, sanitary officer; Hunt, of Port Arthur, nose, throat, eye and ear; Campbell, genito-urinary (and a most busy man! Seven tents of G.U. cases); Vaux, of Winnipeg, registrar and adjutant; Wylde, assistant in medicine; Corbet, of St. John, has been detailed in medicine; while I, not having any *x-ray* apparatus (not delivered yet) am wasting my fragrance in the desert air of two medical tents; and 'desert air' is no figure of speech either, for there is air, plenty of it, with a *vis a tergo* truly startling, accompanied almost every night and sometimes all day with a drenching rain. Our tents are not as good stuff as the Canadian ones—more accommodating to the ingress of rain—but we have hospital beds, lots of blankets, a portable bath, coal-oil heater, oil lamps, tables, chairs, etc., and a fairly decent mess, to which we daily wade half a mile through ankle-deep mud, hence the regulation dress of the oldest riding breeches, and the newest rubber knee boots.

"Yesterday we were inspected by the King, Queen, Lord Roberts, Earl Kitchener and staff. The King looks much older, and good old Bobs carries his eighty-two years like a spring colt. Kitchener is taller, stouter, and whiter than I had pictured him. But Bobs was Bobs, the idol of the Englishman's heart, and it is indeed hard to control the tightening cords as the old warhorse goes by, leaning just the barest trifle on his cane, and, judging by the expressions of the men—more forceful than polite—there were few who would not emulate the followers of the lieutenant who took 'Lungtungpen,' if only Bobs Bahadur were leading them. . . .

"We are moving from here in a couple of days to Bulford, near Amesbury, about five miles away, where I believe they have secured Bulford Manor, and where we are to open a small general hospital, while No. 2 Stationary, under Shillington, of Ottawa, goes to France

this week, and No. 2, under Bridges, goes, I believe, to London or Porstmouth. . . ."

A DESPATCH from Salisbury to the *Toronto Globe*, dated November 22nd, stated that the following officers of No. 2 General Hospital, of which Lieut.-Colonel Bridges is in command, were leaving the next day for France: Lieut.-Colonels Scott and Rudolf, Major Goldsmith, Captains Cole, Menzies, Calhoun, Philp, and McBeth, of Toronto; Captains Bethune and Leslie, of Hamilton; Captains Tytler, of Guelph, and McKee, of Montreal; Major Gardner and Captains Dillon and McLeod, of Ottawa.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canadian Practitioner and Review, November, 1914:

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| Presidential address—Academy of Medicine, Toronto | H. B. Anderson. |
| The Jarish Herxheimer reaction | H. M. Benoit Simon. |

Dominion Medical Monthly, November, 1914:

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|---|-----------------|
| Legislation concerning the right to practise medicine | A. F. McKenzie. |
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The Western Medical News, November, 1914:

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| Mixed infection—diphtheria and scarlet fever | J. A. Rose. |
| Essential hæmaturia | F. A. Corbett. |

The Western Medical News, October, 1914:

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|--|------------------|
| Technique of skin-grafting following burns | C. M. Henry. |
| Ectopic gestation | H. E. Alexander. |
| A case of chronic intestinal obstruction, due to chronic appendicitis, with adhesions, and terminating in an acute attack with operation | H. H. Mitchell. |

Western Canada Medical Journal, September, 1914:

- Ectopic gestation A. P. Mackinnon.
 A review of the advent and clinical application of different biologic products . . . M. R. Blake.

The Canada Lancet, October, 1914:

- The diagnosis and treatment of acute perforations of the stomach and duodenum S. M. Hay.

The Canada Lancet, September, 1914:

- Chronic dacryocystitis: the intranasal operation, with case report . . . J. McGillivray.

The Public Health Journal, November, 1914:

- Municipal loans and municipal works R. O. Wynne-Roberts.
 Pasteurization of milk L. C. Bulmer.
 The examinations of a recruit W. A. Scott.
 Municipal abattoirs R. O. Wynne-Roberts.
 Food inspection among the foreign population G. R. Mines.

HURON MEDICAL ASSOCIATION

A MEETING of the Huron Medical Association took place in the council chamber at Goderich on Wednesday, September 16th. There was a good attendance and some interesting papers were read. It was decided that members of the association should give their services without remuneration to the families of privates who have volunteered for military service during the present war.

CANADIAN MEDICAL ASSOCIATION

PUBLIC HEALTH SECTION

Report of the Committee on Applied Sociology

THE Committee in attempting to formulate its report on Applied Sociology recognizes the two standpoints from which the subject may be viewed, viz., that of society and that of the individual and especially of the individual physician. It observes further that as sociology refers to individuals in the mass, so the various matters dealt with in such a report must apply especially to the association of individuals as members of communities. Critical observers of the great world movements have everywhere been noting, especially with the twentieth century, the evolution of what is called a social consciousness in the western world, which for a century had been especially dominated by the theories most elaborately taught by John Stuart Mill in his political economy in which individualistic competition was set forth as the real basis upon which a progressive society could exist. Plainly, however, there is a higher ideal, and that is that the members of society should exist for the good of one another. In public health such a theory had its genesis largely in Edwin Chadwick, the slum worker, who was instrumental in getting the Registration Act for births, marriages, and deaths of England placed on the Statute Book in 1838 and later the first Public Health Act in 1849. With these two agencies it became possible, through the facts obtained, to apply remedies under Acts relating to nuisances, to housing, to pollution of streams, to contagious diseases and so on. But not until Pasteur and other workers established the germ theory of disease did it become possible to formulate methods for attacking disease systematically, whether in the individual or in the group. The first comprehensive means to this end is to be found in the Consolidated Public Health Act of England of 1875 which summarizes much found in previous isolated Acts. Nine years later this formed the basis of the Public Health Act of Ontario, which again was the model upon which all provincial legislation in Canada has been founded. Year by year thereafter amendments to the Act were added dealing with many problems, each coming closer in its bearing upon the daily life of the people. Speaking of anti-

tuberculosis work Dr. Hermann Biggs, general medical officer of New York, has said:

“Step by step with the growth of our knowledge of the causes of the disease, the scope of the work has broadened, first one, then another agency was enlisted in the campaign, and we are striking nearer and nearer to the essential cause of the prevalence of the disease, namely the social environment.”

The bearing of these facts upon the work of the practising physician is apparent, and he too has been as greatly aided as directed in his benevolent work in the cause of humanity. Its extent, its possibilities, and the nobility of it have been made ever more apparent to him, and to-day he enters ever more largely into the life of the community of which he is so important a member and constantly is asked to perform some public function as a duty which is complied with as a privilege.

In the matter of the compulsory notification of contagious diseases, it is interesting to note the gradual extension of legislation beyond what formerly included only smallpox, scarlatina, diphtheria and measles, to all acute contagions; since to-day the whole range of diseases in any way communicable are one after the other coming within the purview of what we call preventive, but what is more exactly termed state medicine.

From such facts as that Bismarck's Compulsory Insurance Act was passed in Germany in 1882 and that in 1912 even a wider Act of the same sort was passed in Great Britain including within its provisions 15,000,000 people, it has become evident that the needs of modern society in the matter of the health of its individual citizens are to be the only limitations set to what the legalized functions and social duties of the practitioner of medicine shall be.

Your Committee, however, desires rather to present the second phase of the subject, viz., that dealing with the *ethical* responsibilities of every disciple of the Father of Medicine, who has taken in spirit, if not in so many words, the Hippocratic oath. While it is true that the physician ought to maintain a proper secrecy with regard to the ailments of the individual patient, so far as no injury to the public may result therefrom, yet in view of our ever widening knowledge of disease it seems plain that from the position the physician is constantly placed in because of his very knowledge he can no longer, and would not indeed, avoid the issue of what his duty as a good citizen and patriot demands of him.

Some of the questions which the practitioner of to-day has pressed upon him are such as the following:

Compulsory Notification of Tuberculosis

It is just twenty years since this matter was first pressed upon the Government of Ontario by the Provincial Board of Health. The then premier listened sympathetically, but asked: "What, for instance, are you going to do with the sick persons whom you will have practically forced out of boarding houses and hotels?" It was in the same year 1894 that Dr. Hermann Biggs, under the New York Board of Health, instituted the practice of the examination of the sputum in all cases coming within the knowledge of the Board, and it was in 1897 that notification of tuberculosis was there made compulsory. In 1894 only 511 specimens of sputum were examined and in 1911 there were 41,820. The logical sequence of notification was the disinfection of premises vacated by death or removal and the disinfection periodically of infected houses. As tuberculosis is so chronic and thus may be a source of infection to many, it further soon followed that supervision of cases in the houses and the education of both patient and members of his family became obviously necessary. So district trained nurses under the Board of Health or the Antituberculosis League were appointed as the next step. Such measures were, however, elementary in the same manner as treating acute contagions in their homes formerly existed when compulsory notification first began. It soon became apparent that to deal effectively with the many families where tuberculosis had induced privation or poverty, various institutions became necessary both for the care of the sick and for the protection of their families and associates. Logically the first step was the clinic to which any person wishing free examination and attention could go or be sent by social workers, clergymen, etc. Thus arose what is called the Tuberculosis Clinic, now operative in every progressive city, New York having twenty-nine such clinics, while Glasgow has six. Such being directly associated, as they ought to be, with the local board of health and the charity departments of a city, become clearing houses for the disposition of cases in the manner most suited to their individual condition and needs.

Such divisions of work in their natural order, as given by Dr. H. Biggs, are:

1. Sanatoria for early and curable cases.
2. Hospitals for advanced cases.

3. A detention hospital for compulsory handling of undesirable patients from these institutions, or from charitable or corrective institutions, or from their homes where poverty or insanitary surroundings require that patients be compulsorily removed.

4. Open air camps—as day camps, roof gardens and tents.

5. Hospitals, especially marine or lakeside hospitals, for diseases of bones, joints and glands in children.

6. The preventorium for children.

7. The day nursery for the care of children of tuberculous families.

8. Open air schools.

9. Home treatment of tuberculous families.

10. A colony farm to give occupation to persons having recovered so as to be able to work.

Such is as admirable an illustration of applied sociology as can anywhere be found; but Dr. Biggs, after referring to the fact of New York's density of population—600 to 1,600 per acre, exceeding that of London which is not more than 400, makes the notable statement: "The whole problem of the prevention of tuberculosis is inextricably interwoven with various economic features in the lives of the working classes, but this applies to a much larger extent to the inhabitants of the great cities than elsewhere. It cannot be wholly solved until the questions relating to sanitary housing and the general welfare of the poorest classes have been satisfactorily answered."

We have presented this rather full outline, since nowhere has there been seen so extended and systematized an illustration of applied sociology based upon the data gained by compulsory notification and complete death returns as in New York, and nowhere have results been more striking, since the returns for 1911 in the boroughs of Manhattan and the Bronx show the following:

	Population	Total deaths Per 1,000	Deaths from tuberculosis per 1,000	Per centage of tubercu- losis deaths	Total noti- fications
1881.....	1,244,511	31.04	4.92	15.85	.....
1894.....	1,809,353	22.70	3.16	13.89	4,166
1911.....	2,872,428	15.78	2.35	14.90	51,211

The total tuberculosis deaths in 1911 were 6,760 and the reported cases for the year, not including duplicates, were 17,360, so that the notified cases, even excluding duplicates carried over from

a preceding year, were 257 for every 100 deaths. That the principle of compulsory notification has grown gradually, and only as a part of applied sociological methods, as seen in New York, may be judged from the fact that it was made compulsory in England and Scotland only in 1910. That its completeness, even in a country where compulsory methods are proverbially well enforced, varies greatly is seen in the following table:

RATIO OF NOTIFICATIONS TO DEATHS FROM TUBERCULOSIS (PHTHISIS) FOR THE YEARS 1910-12.

	Death rate per 1,000	Total Notifications	Proportion of cases to 100 deaths
Birmingham.....	1.28	4,394	404
Liverpool.....	1.49	3,690	329
Manchester.....	1.53	2,398	216
Bradford.....	1.26	921	253
Portsmouth.....	1.13	1,267	475
Sheffield.....	1.22	980	173
Edinburgh.....	1.26	1,255	309
Glasgow.....	1.32	2,330	225

A careful analysis by Dr. A. S. McGregor, tuberculosis officer for Glasgow, of these figures, and especially of the ratio of notification by age periods, indicates very different proportions in the degree that certain kinds of health and social work are carried on. For instance, the ratio of school-children notified has always been found high where systematic medical inspection of schools is carried out, or where a tuberculosis dispensary is actively carried on, as in Edinburgh where notified cases rose from 448 to 1,221 from 1910 to 1911 owing to a critical and extended home examination of the relatives of consumptive patients coming to the Royal Victoria Dispensary. Remarking upon such variations, Dr. McGregor speaks of the marked differences in notification, depending upon the variations in interpreting physical signs by different physicians who deal especially with tuberculosis, and states that it is apparent that some special officer, such as the superintendent of a tuberculosis sanatorium, must be given the opportunity to follow up notified dispensary or other cases. For instance, Glasgow has six tuberculosis dispensaries, and the special tuberculosis officer with his sanitary visitors watches over suspected cases, which are treated for catarrhs, anæmias, etc., and tested with tuberculin when deemed necessary. During the years 1910-14 in Glasgow

all notified cases were followed up, and it was found at the end of the period that of 3,425 notified cases, 1,775 had died in the four years, or 54 per cent. Speaking of 493 or 14·2 per cent. of the cases which could not be found, Dr. McGregor remarks that the operation of the Compulsory Insurance Act with better organization will largely eliminate these difficulties. Dr. McGregor points out the enormous advantage to be gained from observation of notified school children, since it confirms the general experience of the existence of a very chronic and easily arrested type, that of tuberculosis of the lungs in children. When it is remembered that so many of such cases follow measles and whooping cough, it is obvious that the medical health officer cannot in practice limit the extent to which his relations with physicians in charge of such cases should extend. What is of further interest is the evidence from the statistics of cases alive, over fifteen years of age, that at the end of four years 67·5 per cent. were considered definitely tubercular and nearly 10 per cent. more definitely well, while the balance, about 20 per cent., had bronchitis, asthma, etc. Of extreme interest in Dr. McGregor's study of cases were those where subsequent cases had been notified. Thus, 130 cases in 1910 were followed by 150 secondary notifications within three years, or 74 in 1911, 51 in 1912 and 25 in 1914. Over all, the figures show that in three years 411 notifications were made respecting members of houses previously reported as having had 375 primary cases.

We have dealt thus fully with both the statistics of New York and Glasgow because these present two of the best illustrations of science applied to social and public health problems, which are indeed one; while the work done and the means applied in both cities for studying and dealing with tuberculosis are in keeping with what is almost axiomatic, that "the degree of prevalence of tuberculosis in a peculiar degree becomes the gauge of individual or communal effectiveness, measured from the physical, ethical or economic standpoint." The same truth is expressed in another way in an address by the Hon. James Bryce at a Housing Conference in New York on "The Menace of Great Cities," when he said, "Whatever you are trying to accomplish for the benefit of the poorer classes leads you, by one path and another, to the housing problems. The place where a man or woman lives is vital to the character of the man or woman."

From the illustrations given your Committee turns to Canada for similar evidences of applied sociology. In 1900 the Canadian Association for the Prevention of Tuberculosis was organized and

in the same year the first Sanatorium Act was passed in Ontario. The success of the educational work, both national and provincial, has in recent years become more marked, as is witnessed by sanatoria being established in all the provinces, whether developed by government or by large grants-in-aid to municipalities or districts. As an illustration of a splendid advance in applied sociology with a highly evolved social consciousness, your Committee finds in the work of the city of Hamilton as admirable an example as almost any elsewhere and deems it appropriate to refer to it.

The seventh annual report in 1912 of the Hamilton Health Association states that with a population of 50,000 the tuberculosis deaths were 87, and in 1912 with a population of 80,000 the total was 64, or 7.5 per cent. and 5.3 per cent., respectively, of the total death rate. With the collective days at the sanatorium being 19,781 the expenditures were \$18,556.15, or 0.94 per diem, the lowest cost of any similar institution in Canada. When the Sanatorium began, the admissions were as follows: In 1906, 71; 1910-11, 139; 1911-12, 109; and 65 were in residence at the time of the report being made. It is of great interest to compare this with Ottawa where the provision of a hospital for advanced cases and now a sanatorium for early cases exists. The report of Ottawa for 1912 states:

Patients admitted 1912-13.....	118
Patients died in hospital in 1913.....	39
Hospital patients who died outside.....	2
Total deaths in city.....	130
Population.....	100,000

At the Hamilton dispensary the number of persons examined in 1912 was 718, of whom 76 were children. There were 2,032 visits to the dispensary, an increase of 1,268 over 1911. Visits to the homes of patients numbered 1,212. At the Ottawa dispensary the number examined in 1912 was 137, of whom 32 were children, an increase of 52 over 1911; and there were 905 visits to the dispensary. The cost per diem per capita in Ottawa at the Sanatorium was \$1.10. We find in each of these cities, as in most other progressive centres, the several means of applied social work well illustrated, namely (1) the sanatorium for early cases, (2) the hospital for advanced cases, (3) the home for far advanced cases, (4) the dispensary, (5) the visiting nurse, and (6) the ladies' auxiliary. Hamilton has in addition its preventorium, or open-air school. The work done in both these cities which are so comparable illustrates

well a remark by Viscount Bryce in the paper already quoted, "But, when everything that the state can do has been done, there will remain a large field in which the action of private men and women will be more helpful than the action of the state can be, because it will be better adapted to the needs and conditions of the people whom it is intended to help, because it will be more flexible, more personal, more human, more animated by that spirit of helping the weak which is the essence of every effort to raise them."

In another quarter I find illustrated applied sociology in a recent review in the New York *Sun* of the life of that remarkable social reformer, the late Jacob Riis, a newspaper reporter and native of Denmark. His work led him everywhere into the slums and he greatly stimulated and aided Theodore Roosevelt when Police Commissioner of New York:

"Mr. Riis did the work that won small parks for bad spots in the city. He laboured years to have more schoolhouses built. The evils he exposed he discovered in his work as a reporter. He knew how to write so as to wring men's hearts with his news of oppression, misery, and hopelessness. He compelled indifferent city officials to concede the reforms he suggested or approval. It was Riis who exposed the contaminated state of the city's water-supply, and thus brought about the purchase of the whole Croton watershed. It was Riis who forced the destruction of rear tenements, and thus relieved the hideous darkness and density of life among the very poor. He forced the obliteration of Mulberry Bend, the worst tenement block in the city, and had the space turned into a park. He spoke the word that induced Commissioner Roosevelt to abolish the police lodging-houses. He fought for and secured a truant school. He drove bakeshops out of tenement basements. He demanded light for dark tenements, thus illuminating the hiding-places of dirt, filth and crime."

Before passing on to another phase of the report your Committee would refer to the status of compulsory notification of tuberculosis as the measure of administrative effectiveness in public health departments. Dr. Herman Biggs, from 1892 onwards the general medical officer of New York and now chief medical officer of New York State, introduced, after much discussion in medical societies, compulsory notification of tuberculosis. Speaking of it in a paper in August 1913, he says:

"Of the various features of the antituberculosis work, none is more fundamentally important than notification and registration

of cases; and none has been more misunderstood or opposed by the medical profession. In spite of almost innumerable objections at first urged, it has finally been realized that no adequate control of tuberculosis can be effected without such notification and the objectors one by one have been silenced. . . . Certain it is that not one of the disastrous consequences urged against notification has materialized and in New York City such notification has now been in force for almost twenty years."

The Quebec Public Health Act 1909 states that every householder and physician is obliged to notify tuberculosis, as other diseases, and is liable to a fine of \$20.00 for each day he neglects it, yet I find the Report of the Royal Commission 1909-10 stating: "The Commissioners are not unaware that there is a law in our Province ordaining that physicians declare all cases of tuberculosis to the health authorities, but they have ascertained that the law remains a dead letter." The Public Health Act of Ontario of 1912 makes the notification of tuberculosis compulsory, yet it is found that the deaths in Ottawa in 1913 were 136 while the cases notified, mostly through public institutions, were only 108. It is probable that these two instances illustrate the situation in most Canadian cities; although in the instance of Hamilton there were in 1911 only 64 deaths from tuberculosis and 83 notified, while with rather fewer cases in the sanatorium there were 150 cases notified, whether directly through physicians or through the institutions in 1912.

The Quebec Commission report says: "In order to combat a disease it is necessary to know where it exists." Dr. Biggs speaking of house visitation, which of course is conditioned by *notification*, says: "And just as tuberculosis has been found to be, in the final analysis, not a mere bacterial invasion but a symptom of social pathology, so it is gradually being realized that many other diseases affecting mankind have a social pathology." The possibility of notification has depended upon the public sentiment which has assisted in erecting hospitals and sanatoria, and the fact that every province has local and provincial sanatoria and hospitals for advanced cases, either special or general, points to the logical gradual increase in notification, wherever a medical officer receives the support of the social workers of his municipality.

As an adjunct illustrative of applied social work, the education of the people by moving pictures supplied by the boards of health has come to be of great value, being often associated with tuberculosis exhibits.

Child Hygiene and Inspection of Schools

The ways by which modern scientific knowledge is being applied to social needs are so many that time fails to present such in all their aspects; but in nothing has the social conscience been more aroused than in the care of the children. Every progressive city has recognized that, through trained district nurses either under the direction of the board of health or some social service committee whether of hospitals or charitable organizations, what may be called first aid is given by nurses' visits to the homes of the poor when infants are born, this being the first step to be taken to save the babies. This work has in recent years been greatly supplemented by the milk stations, similarly under trained nurses, where the women come with their sick children and after medical examination are supplied with certified milk and taught how to care for the baby and its food. It is in these ways that accurate knowledge is being daily gained of the actual conditions in the homes of the poorer people and through which organized methods may be adopted for dealing with other problems as sanitary houses, overcrowding and contagious diseases. But at five or six years of age one seventh of the total population, the school children, pass under the direct supervision of the State. Here we see the beginning of public supervision by the State and the test of public progress and social efficiency applied at once. For instance in a series of Indian children awaiting admission to some boarding school in Alberta, not one was examined who did not show signs of initial tuberculosis; but we need not go farther than the reports of school nurses in any of our city schools to show the need of adding to the supervision of the teacher, exact trained medical knowledge. Speaking of a Toronto suburban area the school nurse thus describes the situation:

"The population until recently was made up of new comers from the British Isles: the majority being English. These families occupied tar paper shacks of from one to three or four rooms. In many cases a house twenty feet square, divided or curtained off into living room and bed-room was the home of six or eight persons. Fathers came out from the old land, purchased a small piece of ground, erected a shack."

Through the kindness of Dr. Bentley, of Sarnia, the district medical officer for south-western Ontario, I have been enabled to supply the actual results of a medical inspection carried out by himself and the local medical health officers. It was found that over 60 per cent. had some physical defect demanding skilled

attention, of which defects of vision and the teeth were the most numerous. It is thus, as Dr. Bentley illustrates, that the wide range of sanitary influences becomes educative and the child becomes the medium through which light and leading enter the home as well as through which trustees become informed and cognizant of their duties. This application of sociology is of the widest character and, like the work done with regard to tuberculosis, can be pushed to limits measured only by the degree to which medical officers, inspectors, teachers and school trustees recognize the extent of work to be done and appreciate the social responsibilities resting upon them. Dr. Bentley writes as follows:

"In the months of October and November, 1913, I inspected all the school children and the High School students in Parkhill, Lucan and Ailsa Craig as well as those in 17 country schools. The defects noted were: defective vision, defective nasal breathing, enlarged tonsils, carious teeth. Total number of inspected, 821; of defective, 432; of defects, 659. After these inspections had been completed the school nurse made visits to 191 homes. In March and April of this year I inspected the school children in Forest and Thedford, as well as those in 11 country schools. The total number of those inspected was 571; of defective, 347; of defects, 512.

The school nurse made visits to 162 homes and found many of the children already under treatment. Of 38 children in one room in Forest we found 19 with defective vision, and of 50 children in another school in Thedford 21 had defective vision. In both cases we found that these children had been allowed to attend classes for a year and over in poorly lighted buildings, while new schools were under construction. As an indication of the importance of inspections being made, I give you here a report which applies to the one recently made: impaired vision, 104; carious teeth, 207; defective nasal breathing, 69; enlarged glands, 19; anæmia, 37; ringworm, 1; pediculosis, 12; total 512 in 821 inspected."

Control of the Social Evil

This problem will doubtless be dealt with by the special committee; but no report on applied sociology would to-day be considered complete without reference to it. It is impossible to separate from the complex factors which enter into the problem any single one as being that to be specially attacked; but in every direction to-day the clinic, psychopathology, and heredity are being ex-

ploited in endeavours to determine what is the true direction in which social work can best cope with this evil. There are, however, several elementary facts which serve to guide society in its more simple efforts, as when it is stated that if alcoholism is associated with 25 or 35 per cent. of cases of venereal disease, the plain fact must exist that under the influence of intoxicants many first cases have become infected. Hence society to-day is concentrating its efforts as never before on curbing the national vice of alcoholism, basing its arguments on physical, mental, moral, industrial and national grounds. Where the old argument is used that only the hereditary degenerate gets drunk, and that the ordinary use of alcohol by the normal man in society is harmless we only pity the superficiality of the observer or question either his good faith or his intelligence. When we are taught by most extended statistics, as those of Dr. Mott of London, that practically all paretics and tabetics are syphilitics, that 40 to 50 per cent. of the children of such are feeble-minded and show the spirochætes in their blood, and that many of these were alcoholics, we are again met by the argument that it is inevitable. When we learn that 80 per cent. of the children in the juvenile courts of New York, or 10,000 in a single year, were feeble-minded, and and that some 50 per cent. of the young women sent to reformatories are feeble-minded, we hear the statement that such is inevitable, and from many quarters are met with the old chestnut: "What is the use of talking about these things, drunkenness, vice and feeble-mindedness even to insanity, all have been and will be. Better leave well enough alone." It is indeed like a fresh breeze from the Laurentians blowing over thousands of miles of evergreen forest, uncontaminated by the presence of humanity, to find a man like Dr. Herman Biggs, for a quarter of a century general medical officer of a city like New York, taking for his motto everywhere: "Public Health is purchasable: within natural limitations a community can determine its own death rate." Where women are demanding, with fury even, the vote to devote it to social ends, where Scotland possesses a general Act preventing drinking places from opening till 10 a.m. and where the leader of a political party in Canada's most important province makes "Abolish the Bar" his battle cry, it is quite clear that social forces taught by statistics, by physiology, by economics and above all by the cost of vice and its logical consequences in individual, social and natural enfeeblement, and where especially the cry is going up from the diseased, the feeble-minded, insane, and neurotics, all of

whom bear the stigmata of hereditary or induced defects, physical, mental and moral, it is abundantly apparent that a social consciousness has become developed which must find expression in common action through means both individual and collective, whereby society as a whole will be uplifted, and humanity find, as the Hindoo poet, Dr. Tagore, teaches, the realization of life in action:

The gods addressed the mighty Vishnu thus,
"Conquered in battle by the evil demons,
We fly to thee for succour, Soul of all:
Pity, and by thy might deliver us."
Heri, the lord, creator of the world,
Thus by the gods implored, all graciously
Replied: "Your strength shall be restored, ye gods
Only accomplish what I do command."

July, 1914.

P. H. BRYCE, M.D.,
Chairman.

Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE sixteenth regular meeting of the Society was held Friday evening, May 15th, 1914, Dr. W. F. Hamilton in the Chair.

LIVING CASES: (1) Tuberculosis of the stomach, by Dr. A. E. Garrow.

Up to 1899 there were but thirty cases of this condition reported. The patient was a young man aged thirty years; comparatively good health until a year ago, when he began to complain of pain about an hour after eating, referred to epigastrium; severe pain extended across into both hypochondriac regions through the back; pain relieved by taking food, although somewhat aggravated after a meat diet. In January of this year pain much more severe, accompanied by vomiting and tenderness. Liquid diet gave marked improvement and gain in strength. On getting up and resuming ordinary diet, symptoms returned. Blood had been

found in the stools before admission. The case ran an afebrile course; no disease of chest; duodenal ulcer diagnosed. April 1st, opened abdomen: extensive miliary tubercles from pyloric up towards cardia, densely marked over antrum; no evidence of tuberculosis of the distal layer of the peritoneum or of the bowels or parietal layer of peritoneum. Glands of lesser curvature enlarged. No adhesions of omentum to stomach nor to parietal peritoneum. On attempting to lift up the pyloric antrum it was found that in the posterior wall, and extending well up to the pylorus shading off in an oblique fashion, was a dense hard mass two or two and a half inches in width and probably four inches in length, evidently attached to the pancreas. It was evident we were dealing with tuberculosis of the stomach and the mass was probably a large tuberculous ulcer. Giant cells and tubercle bacilli were found in the gland removed for examination. A gastro-duodenostomy was performed. The patient had a stormy convalescence for the first three days; on the second day had a chill and an exceedingly rapid pulse, some distension, and vomited once in the first twelve hours. Condition gradually improved and in three weeks was taking food well. Improved steadily and has gained fifteen pounds in weight. On Monday of the present week he vomited twice but since then has had no vomiting or distress. An x-ray plate taken yesterday by Dr. Pirie after a bismuth meal shows new trouble developing; evidently interference with outlet of food from cardia through the anastomosis and probably a giving way of the fascial band so that food is going on through the antrum and pylorus. Our theory now is that the patient may not be suffering from tuberculosis alone but from malignant disease as well; this has been noted in a number of the cases of tuberculosis of the stomach reported.

2. Vincent's angina, by Dr. L. J. Rhea. The boy is a patient of Dr. Chas. Vipond and is a typical case of this condition.

DISCUSSION: Dr. H. S. Birkett: This condition has been seen by me very frequently and this is a typical case, a ragged looking ulcer covered with a sloughing membrane, and the secretion when wiped off gives a very offensive odour. These cases are discovered accidentally and have been mistaken for lues, diphtheria, and even malignant disease. The course is rather slow and the best treatment is peroxide of hydrogen with which the ulcer is swabbed, and subsequently guaiacol.

Dr. K. Cameron: The case which I showed before the society some time ago was on the hard and soft palate and extended through

spaces between the teeth. Dr. Rhea diagnosed it. Salvarsan cleared the ulcer.

Dr. H. S. Birkett: I would like to ask why in some of these cases the use of neo-salvarsan has been of so much benefit?

Dr. L. J. Rhea: It has been considered by some that there is a definite relationship between the bacillus and the spirochæte and the use of salvarsan is adopted on that basis.

PATHOLOGICAL SPECIMENS: Series by Dr. L. J. Rhea:

1. Sarcoma of the larynx.

2. Diverticulum of urethra posterior to triangular ligament, extending as a narrow tube opening up into a diverticulum beneath the submucosa. Patient was struck with a brick, injury leading to extravasation of urine resulting in severe symptoms leading to death.

DISCUSSION: Dr. A. E. Garrow: What was the nature of the infection or were any cultures made?

Dr. M. Lautermann: The nature of the epithelium lining this diverticulum might determine whether it was congenital or acquired.

Dr. L. J. Rhea: The process was so extensive that there was no lining membrane left; the underlying tissue was also destroyed. The streptococcus was the primary infection.

CASE REPORTS: 1. *Lack of development of the membrana reuniens* followed by complete closure of the skin of the abdominal wall with ventral hernia, by Dr. R. E. Powell.

DISCUSSION: Dr. K. Cameron: I recently had a case of this nature; the child was born at eight months. Through an opening about one quarter inch to the right of the umbilicus the whole of the intestines protruded. I do not think the small intestines was more than a foot long; the colon was about three inches.

2. *Excision of the hip for tuberculosis*, by Dr. A. MacKenzie Forbes: The case illustrates the difficulty of knowing when, in the history of severe cases of tuberculosis of the hip, radical procedures should be adopted. Child of eight years who, two years previously, had pleurisy with effusion. December, 1912, brought to orthopedic outdoor department complaining of pain in hip of three weeks duration. Child poorly nourished; muscular spasm about hip, 45° flexion, some adduction, no fluctuation. Child anæsthetised, flexion reduced, hip immobilized in long plaster of Paris spika from nipple down to ankle. In March, 1913, admitted to Children's Hospital with increasing temperature, average 100°, foot swollen, spika removed. No fluctuation noticed and, instead

of atrophy, there was swelling of the hip, leg, and foot. A larger spika put on. In May spika had to be changed again on account of swelling. In September temperature improving, child's general health improving but, as again swelling indicated pressure from spika, it was removed and it was found that the thigh had increased one and a half inches more in circumference than the other; still no sign of abscess, just a general infiltration of the parts. In January, 1914, spika again removed and another search made for pus. Patient had no temperature and seemed to be in good condition. Another spika applied. Joint aspirated a couple of times, at first only a suggestion of pus, going deeper to the bone secured some. On May 7th, another examination was not effective and incision revealed dead bone. The neck, head, and great trochanter and upper part of the shaft had to be removed; even the medulla of the bone was very considerably invaded.

Here was a case in which it would have been better to have incised months ago and it teaches a lesson not to trust too much to temperature; that no matter what temperature a patient may be running suffering from tuberculosis of the hip, if we find generalized infiltration which does not disappear under rest and other general treatment, excision must be thought of. In the case of abscess it is our duty to incise and be prepared to excise.

DISCUSSION: Dr. S. Ortenberg: I should like to ask how frequently *x*-rays were taken of this case and of how much value these pictures would be in guiding one to operative interference in such cases.

Dr. Forbes: No *x*-rays were taken and I do not deny that if it had been possible to take *x*-rays from time to time during the treatment they might have been of much benefit. It is, however, almost impossible to make very much from *x*-rays taken through the plaster of Paris jackets used in this particular treatment.

3. Patent ductus arteriosus with infective pulmonary endocarditis. Drs. Maude E. Abbott and W. F. Hamilton. Dr. Hamilton read the case report and Dr. Abbott gave the pathological findings.

4. Duodenal diverticulum, by Dr. Fraser B. Gurd.

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Place of Meeting, 1915—Vancouver, B.C., July 6th, 7th, 8th and 9th.

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